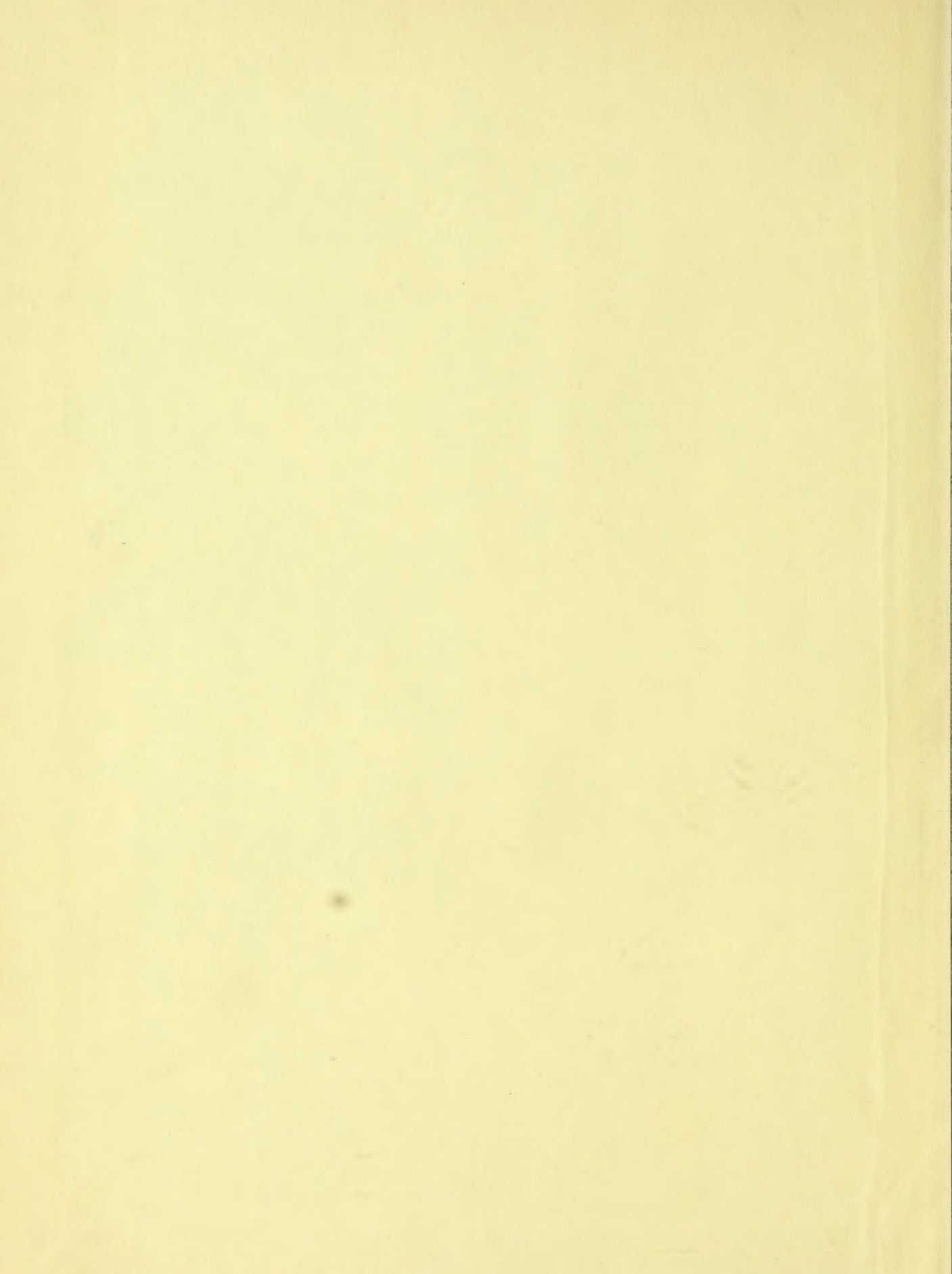



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THE INSECT PEST SURVEY BULLETIN

A periodical review of entomological conditions throughout the United States,
issued monthly from March to October inclusive.

Volume 3

Number 1

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
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INTRODUCTORY STATEMENT

In this, the first number of the third volume of the Insect Pest Survey Bulletin, we are inaugurating a new feature. Through the generous cooperation of the entomological forces of the Dominion of Canada we are able to include a monthly review of the outstanding entomological features of the great territory lying north of the United States which has so many entomological problems in common with the northern States of this Union.

An Insect Pest Survey of the Dominion of Canada, working along similar lines and with the same general purpose as this Survey, has recently been instituted and is under the supervision of Mr. R. C. Treherne, Chief of the Division of Field Crop and Garden Insects of the Canadian Department of Agriculture.

The appearance of the Annual Summary of insect conditions throughout the United States for the season of 1922 will be delayed somewhat, as the Survey is attempting to review a much more comprehensive group of insects than was reviewed in the first Annual Summary. In addition to the larger scope of the summary the mass of data being received from the States is constantly increasing.

During the past winter the distribution records of the Survey have been very materially augmented by the extreme generosity of our collaborators in three States, who have very kindly loaned us their entire file of correspondence record cards, in one case extending back to 1888. These cards indicate the name of the insect, the date and the place, and in some cases the crop attacked as referred to in each letter received at the Station. These records very clearly indicate the parts of the State where certain insect pests are most frequently attracting the attention of the agricultural population, and when similar data are brought together over a reasonably large area of the region of optimum conditions for the successful life of a given pest can soon be ascertained.

OUTSTANDING ENTOMOLOGICAL FEATURES IN THE UNITED STATES

FOR THE PERIOD FROM NOVEMBER 1, 1922, to APRIL 1, 1923

The temperature throughout the United States during the period covered by this report was generally above normal except during the first, second, and third weeks in February when below-normal departures were experienced over the greater part of the country. During the second and third weeks in December there were also minus departures throughout the greater part of the Mississippi Valley, New England, and the Middle Atlantic States. The New England States, as a whole, experienced a somewhat below-normal winter, minus departures being almost continuous from the beginning of January to the end of February. The Pacific Coast States had cold weather during November and the first half of December and again the temperatures were below normal during the last week in January and the first two weeks in February. Abnormally cold weather prevailed in the Great Basin during November and February. Temperatures were above normal in the Southwest from early in November until the end of January. The Rocky Mountain region had minus departures during November, the second and third weeks in December, and the first three weeks in February. Temperatures in the North-Central States were above normal with the exception of the second and third weeks in December and the month of February, similar conditions prevailing over the West-Central and East-Central States. The temperature in the Lower Mississippi Valley was generally above normal as was also the case in the Middle Atlantic States except in the month of February when minus departures were recorded. The South Atlantic States had very similar departures to those of the Middle Atlantic.

The drought that prevailed between the Mississippi Valley and the Rocky Mountains during the latter part of the summer was relieved early in November; droughty conditions, however, continued in most of the Middle Atlantic and South Atlantic States during this month. In December the drought was relieved in the Lower Middle Atlantic and South Atlantic States, while this month showed a deficiency of rainfall in the Mississippi Valley. The January rainfall was below normal in the South Atlantic and Gulf States and above normal in the Middle Atlantic and New England, while in most of the Upper Mississippi Valley, except Wisconsin and Minnesota, it was below normal. The Rocky Mountain States also showed a deficiency of rainfall in January. In February from the Great Plains to New England the rainfall was below normal, while in the Rocky Mountain foothills and the Gulf region it was above normal. The South Atlantic States during this month, as well as the Great Basin, the Pacific Coast, and the Rocky Mountain States, were all experiencing dry weather.

The mild weather has favored the successful overwintering of the chinch bug and it is now found to be present in winter quarters in threatening numbers over the greater part of southern and central Illinois, southern Nebraska, and eastern Kansas.

The green bug appeared in numbers sufficient to produce an epidemic early in the season in northern Texas, Oklahoma, and southern Kansas. Though still widespread, it is not at present considered to be a serious menace. During the spring it was also reported from Louisiana and New Mexico.

The annual examination of hibernating quarters of the cotton boll weevil made by the Bureau of Entomology's Delta Laboratory indicates that this insect has not passed the winter well in northern Louisiana and we may expect a much decreased spring emergence in the general region than was the case last year. In Alabama, however, reports have been received that a very high percentage of the weevils has passed the winter successfully.

The clover-leaf weevils are still, apparently, on the increase in Illinois and heavy damage is anticipated this season.

The spring cankerworm was observed in flight on March 9 in Missouri and on March 13 in West Virginia.

The fall cankerworm was emerging and ovipositing in serious numbers in Morris County, N. J., the last week in March.

The San Jose scale is attracting increasing attention in Rhode Island, Ohio, Georgia, Indiana, Illinois, Idaho, Texas, and New Mexico. The lime-sulphur spray, possibly owing to faulty application, is not proving as satisfactory as formerly and some States are recommending lubricating-oil sprays.

The first adult of the plum curculio was observed on March 5 in Georgia, indicating that the beetles will probably appear in numbers from hibernation by the time the peach trees are in full bloom.

The large numbers of hibernacula of the pecan case-bearer that are present in the semiarid pecan-growing sections of Texas seriously threaten the otherwise promising crop for 1923.

The orange basketworm is reported as causing serious damage to the fruit and young growth of several large plantations in Florida, the damage in some cases running as high as 20 per cent of the fruit.

The European red mite is now quite prevalent in the fruit sections of New York, Connecticut, and Ohio and scattering infestations have been found in Maryland.

Indications of a serious outbreak of the pea aphid in the San Francisco Bay region of California have been reported.

The onion thrips is causing serious trouble in the important canteloupe growing section of the Imperial Valley in California. The thrips are now attacking the early vines under their frost protectors.

The common field cricket is reported as seriously infesting 200 acres of lettuce in San Benito County, in some places necessitating planting the crop three times.

Reports have been received from California that the cattle tick and cattle scabies are no longer present in that State.

OUTSTANDING ENTOMOLOGICAL FEATURES IN CANADA

FOR THE PERIOD NOVEMBER 1, 1922, to APRIL 1, 1923

The winter in Canada has been more severe in the eastern sections than in the West. The depth of snow in the Maritime Provinces has been exceptional. In Western Ontario, except for a few mild days in the latter part of February, the winter has been cold and steady, with a much greater fall of snow than is usual. The same applies, to some extent, to Manitoba; but in Alberta the winter season has been mild, with a light snowfall. In British Columbia the winter season has been open and the spring is earlier than usual.

The European corn borer has increased its area of infestation in Ontario during 1922 by 45 townships, and now involves an area of 12,616 square miles, with 162 townships under quarantine. There was, however, but slight increase in the area of heaviest infestation and a light general decrease in intensity in the area where cooperative control measures have been carried on. Overwintering larvae in the crop refuse under observation, to date (February 25), have suffered slight mortality, protection being afforded by the snow blanket over the whole infested area.

The roadside grasshopper (Camnula pellucida Scudd.) occurred in extreme outbreak form on the cattle ranges of the Nicola Valley in British Columbia during 1922. The general situation and the winter conditions would indicate a continuance of the outbreak during 1923. In the Prairie Provinces the situation is much relieved, though an ascendancy in the numbers of the lesser migratory grasshopper has been observed in many sections.

The pale western cutworm remains the most important grain-insect problem in southern Alberta. It would appear that the same acreage is infested year after year with the centres of infestation constantly shifting. From the precipitation records of 1922, the greatest degree of prevalence will probably occur in southeastern Alberta and western Saskatchewan, with the infestation somewhat diminished in western Alberta.

The grape leafhopper was extremely prevalent in the grape sections of Ontario in 1922. Leaves, weeds, grass, and rubbish, in neglected fence rows, are providing satisfactory hibernation quarters for the adults which have not been reduced apparently to any extent by winter. A noticeable migration is expected to vineyards in the middle of May with favorable spring and early summer weather conditions. The species concerned in last year's outbreak were Ervthroneura comes Say, E. tricineta Fitch, E. vulnerata Fitch, and the varieties of comes, viz: vitis Harr. and ziczac Walsh.

The rose-chaffer occurred in severe outbreak form in several sections of Ontario during 1922, the greatest numbers being present in the sandy grape-growing areas of the Niagara Peninsula. It is not possible to state to what extent this insect will be present in 1923 but winter conditions have not been unfavorable to its successful hibernation.

The forest tent caterpillar will doubtless again occur in outbreak form in New Brunswick, particularly over the southeastern portions of the Province, judging from the number of egg masses now present. Spring frosts in the past have had a very marked influence in controlling this insect and it is possible that this same influence will reoccur this year. The outbreak of the orchard tent caterpillar which assumed important proportions in 1922 in New Brunswick may also continue during this coming season, particularly in the St. John River Valley.

CEREAL AND FORAGE - CROP INSECTS

WHEATCHINCH BUG (Blissus leucopterus Say)

Illinois W. P. Flint and assistants (March 20): From 97 to 98 per cent of the bugs in winter quarters throughout southern and central Illinois are still alive. The winter has been milder than the average and only from 2 to 3 per cent of the bugs died during the winter. We expect from moderate to heavy infestations in about 65 counties this spring.

Nebraska M. H. Svenk (March 10): The chinch bug seems at this time quite threatening in the southern part of the tier counties along the southern border of Nebraska, from Jefferson County west at least to Furnas County, and in the northeastern corner of the State in Boyd County, the latter being a southward extension of a serious infestation in southeastern South Dakota.

Kansas E. G. Kelly (January 29): Chinch bugs seem to be more abundant than during average years. The temperatures have been above normal and very dry. Burning of hibernating quarters is being practised throughout the State.

HESSIAN FLY (Phytophaga destructor Say)

Nebraska M. H. Svenk (March 10): In spite of the dry summer and fall in 1922 the Hessian fly seems to be still quite numerous in early-sown winter wheat in some parts of eastern Nebraska. A field in Dodge County examined in the middle of January contained on the average five puparia of this insect to each wheat plant.

California C. M. Packard (March 7): The Hessian fly is present in considerable numbers bordering San Francisco Bay, and in a region in the northern part of Monterey and San Benito Counties and the southern part of Santa Cruz County.

GREEN BUG (Toxoptera graminum Rond.)

Kansas S. J. Hunter (January 15): Mr. Beamer has completed a survey of the southeastern tier of counties of Kansas and finds no evidence whatever of the green bugs; this region, owing to the unusual drought last August, had no volunteer grain.

G. A. Dean and J. W. McColloch: Mild winter and a backward spring followed by excellent growing conditions have materially reduced the amount of green bug in the western part of the State.

E. G. Kelly (January 20): A few adults were observed in Montgomery and Labette Counties. They have already started to multiply.

Oklahoma

J. R. Horton (January 23): Mr. H. H. Walkden has found three fields infested with the green bug in small colonies in Noble County. The largest of the injured spots measured 20 feet in diameter. No evidence of parasites was found, but adults of Hippodamia convergens were moderately numerous. (January 29): Thirty-six wheat and volunteer oat fields were examined in Oklahoma, Logan, and Carter Counties. In Carter County no aphids of any kind were observed; in Oklahoma aphids were found but none of them were Toxoptera; in Logan County one wheat field was infested with the green bug. This field was very thoroughly infested and covered 20 acres.

Louisiana

T. H. Jones (February 1): A few small areas in oat fields at the Louisiana Experiment station showed damaged by the green bug on this date, the oats being stunted in growth and of a brownish color. Material determined by Dr. A. C. Baker.

Texas

E. E. Russell (January 5): Found two heavily infested spots in wheat fields near Celina, Collin County. The first of these spots was noted by the farmer on December 21; by January 5 this spot was entirely bare. Parasitized specimens were quite plentiful. Syrphidae and Coccinellidae were also present. This field was lightly infested last year. Examinations of fields in northern Dallas, Collin, and Grayson Counties failed to show further infestations. (January 10) Two additional fields have been found to be infested with ^{the} green bug in Grayson and northern Collin Counties.

C. H. Gable (February 21): The winter has been exceptionally mild followed by a cold snap, on February 3 the temperature reaching 22 degrees at San Antonio. The past summer was unusually hot and dry with practically no volunteer growth of grain until late in the fall. Toxoptera are in such numbers that it does not seem possible that they passed the summer on native grass. The general green bug situation does not appear to be alarming, although there is sufficient infestation to cause serious injury should there be unusually favorable weather conditions for the development of the aphids.

New Mexico

R. L. Middlebrook (March 11): This insect has damaged about 10 per cent of the wheat in Dona Anna County. Parasites have not as yet appeared.

GREAT PLAINS FALSE WIREWORM (Eleodes opaca Say)

Nebraska

M. H. Swenk (March 10): In Nance County early in November the Great Plains false wireworm was injurious in the wheat fields, one farmer suffering a loss of an entire field that was sown the last of August.

CORNCORN EARWORM (Heliothis obsoleta Fab.)

Nebraska M. H. Swenk (March 10): In November our attention was drawn to a cornfield in Scottsbluff County that had been extensively damaged by a combination of the corn leaf aphid and the corn earworm during the summer.

ALFALFA AND CLOVERCLOVER-LEAF VEEVIL (Hypera punctata Fab.)

Illinois W. P. Flint (March 20): The larvae of this species are more than usually abundant in southern Illinois. Very little feeding has been done as yet as the weather has been cold.

LESSER CLOVER-LEAF VEEVIL (Phytonomus nigrirostris Fab.)

Illinois W. P. Flint (March 20): Adults of this species are more abundant than has ever been the case before throughout southern and northern Illinois. We anticipate rather heavy damage from this insect during the coming season.

LEAFHOPPER (Stictoccephala festina Say)

New Mexico R. L. Middlebrook (March 11): This insect is more plentiful than usual in the Pecos and Rio Grande Valleys where it is attacking alfalfa.

F R U I T I N S E C T S

APPLE

APHIDIDAE

Illinois S. C. Chandler (March 17): Aphid eggs are fairly abundant in southern Illinois in a few localities. As a whole, they are not generally numerous.

ROSY APPLE APHID (Anuraphis roseus Baker)

Connecticut Philip Garman (March): Many eggs noted in New Haven County.

CODLING MOTH (Carpocapsa pomonella L.)

New Mexico R. L. Middlebrook (March 11): This insect was observed as somewhat abundant in Dona Anna County.

FRUIT-TREE LEAF-ROLLER (Cacoecia argyrospila Walk.)

Idaho D. B. Whelan (March 1): The following counties are known to be infested on this date: Bonner, Kootenai, Nez Perce, Adams, Gem, Canyon, Twin Falls, and Madison.

SPRING CANKERWORM (Paleacrita vernata Peck)

- Missouri A. F. Satterthwait (March 9): Moths were flying at extension lights at Webster Groves until about 8 or 8:15 p. m. None seen after 8:15. Elms are common here, but I do not know of cultivated apples close by.
- West Virginia L. M. Peairs (March 13): Adults, male and female, observed on and near apple trees in considerable numbers.

APPLE MAGGOT (Rhagoletis pomonella Walsh)

- Maine E. M. Patch (March 15): One correspondent from Brunswick reports that his apples were completely destroyed by this insect last year.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

- Rhode Island A. E. Stene (March 15): This insect, though not found in large numbers is apparently on the increase in the northern section of Rhode Island.
- Ohio T. H. Parks (March 23): Several growers in Lawrence County complained that the San Jose scale is increasing in spite of careful spraying with lime-sulphur solution. We note that this scale is worst in an orchard that did not receive the dormant spray in 1922. In this orchard much fruit was ruined by the insect. Well sprayed orchards also have some. Approximately 40 per cent of the overwintering scale are now dead from natural causes other than parasites. Some parasitism exists among the scales.
- Illinois W. P. Flint (March 20): Large percentage of unsprayed scale found alive, 60 to 80 per cent. Many orchardists are changing from lime-sulphur to lubricating-oil emulsion sprays, as there is general dissatisfaction in the southern half of the State.
- Idaho Claude Wakeland (March 16): Very heavy infestations of the scale on willow along the shores of the Snake River and on islands in the River. Fruit orchards adjoining are repeatedly reinfested from this source. Scale generally scattered in apple orchards at Emmett and Parma with here and there heavily encrusted trees in many of the best cared for orchards. In Boise this pest occurs on currants, pear, cherry, apple and rose.
- Texas M. C. Tanquary (March 17): Serious infestations of the San Jose scale have been reported from Milan, Sabine County.
- New Mexico R. L. Middlebrook (March 6): Infestation by the San Jose scale seems to be particularly heavy in the Pecos Valley and a sample with the twigs badly encrusted was received from San Juan County, where our records indicate that heretofore it has been unknown. This County, in the northwestern corner of the State, is very much isolated.

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

- Rhode Island A. E. Stene (March): Reports accompanied by material have been received to the effect that entire trees are dying from the attack of this insect.

Nebraska M. H. Swenk (March 10): During the winter infestations of apple orchards by the oyster-shell scale were reported.

ROUNDHEADED APPLE-TREE BORER (Saperda candida Fab.)

New Mexico R. L. Middlebrook (March 11): The roundheaded apple-tree borer is more numerous than usual in Dona Anna County. Another species lacking the stripes of candida is also occurring in great numbers in this County.

EUROPEAN RED MITE (Paratetranychus pilosus Can. & Fanz.)

Connecticut Philip Garman (March): A great many eggs may be found in orchards in New Haven County, where no injury was noticed last summer.

Maryland E. N. Cory (March 27): Scattering infestations are to be found at this time in the egg stage.

Ohio H. A. Gossard (March 22): The European red mite has been found distributed over most of northern Ohio. Eggs of this species are very abundant in apple orchards in Mahoning County west to Lucas County and southward as far as Delaware County. It is probably distributed all over the State.

CLOVER MITE (Bryobia praetiosa Koch)

Idaho Claude Wakeland (March 16): Very heavy infestations at Parma and Roswell of eggs, indicating that injury may be expected this season.

PEACH

PEACH BORER (Aegeria exitiosa Say)

New York G. M. Coddling (March 20): Practically all peach trees in Westchester County are infested. Have taken from 8 to 10 borers from one tree. Have never seen as many before.

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

New Mexico R. L. Middlebrook (March 11): This insect is present, but not serious in Dona Anna County.

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia O. I. Snapp (March 5): The first adult curculio was taken from a peach tree early this morning while jarring. A few peach blossoms just beginning to appear. Beetles will be appearing in numbers from hibernation by the time the trees are in full bloom.

Louisiana T. H. Jones (March 17): Observations made today on a few peach trees on which abundant fruit has set; some fruit having reached a diameter of 3/4 inch failed to show any evidence of the curculio.

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PEACH-TWIG MOTH (Anarsia lineatella Zell.)

New Mexico R. L. Middlebrook (March 11): This insect has been observed in Dona Anna County.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Georgia O. I. Snapp (March 10): Homemade engine-oil emulsion has given excellent control of this insect, and to date no injury to peach twigs has been discerned from the use of the 2 per cent emulsion. Liquid lime-sulphur has given only fair control, and the dry materials in many cases poor results. Crawlers have been found each month during the winter, proving that full-grown females are living through the winter in the South. These mature scales are difficult to kill with the lime-sulphur. Had low temperatures occurred in middle Georgia during the past several winters the full-grown females in all probability, would have been killed and scale breeding during the winter prevented.

PECAN

PECAN CASE BEARER (Acrobasis hebescella Hulst)

Texas A. I. Fabis (March 14): Seasonal conditions are very favorable to the production of a large pecan crop in the semiarid section of Texas. Acrobasis hebescella hibernaculæ are, however, unusually abundant this winter, and unless parasites check the ravages of this pest the pecan crop will be very short.

GRAPE

GRAPE CANE-BORER (Amphicerus bicaudatus Say)

Nebraska M. H. Swenk (March 10): The grape cane-borer was found numerously infesting grapevines in Furnas County late in December and in Douglas County early in January.

CITRUS AND SUBTROPICAL FRUITS

COTTON APHID (Aphis gossypii Glov.)

California Roy E. Campbell (March 15): Reports from many localities indicate that the aphids are just beginning to get numerous but no damage has yet been done. Control measures, mostly dusting, have begun.

ORANGE BASKET WORM (Platoeceticus gloverii Pack.)

Florida Chas. M. Hunt (March 5): This insect is causing serious damage to fruit and young growth in several large orange groves at Sebring and Avon Park. In one large orange grove damage is estimated at not less than 20 per cent.

CITRUS THRIPS (Scirtothrips citri Moulton)

California A. J. Fleet (March 10): Young individuals first found on March 14. Found in considerable numbers in foothill groves in Lindsay District and generally throughout the Citrus area. No feeding, and young growth not affected. Prospects of a bad year, however.

SWEET POTATO

SWEET POTATO WEEVIL (Cylas formicarius L.)

Louisiana T. H. Jones (January 11). Mr. W. E. Anderson, entomologist of the State board of agriculture, reports weevils as being very abundant in a storage warehouse at Stevensdale. Later investigations by Mr. C. E. Smith, U. S. Bureau of Entomology, showed potatoes in this house to be of the 1921 crop. The weevils had, apparently, been introduced at Stevensdale through infested material brought there from elsewhere and had, apparently, been spread to various farms in that section through this material.

CABBAGE AND KOHLRABI

HARLEQUIN CABBAGE BUG (Murgantia histrionica Hahn)

Louisiana T. H. Jones (March 14). Adults and a few eggs were observed at Baton Rouge today. No nymphs have so far been seen.

STRAWBERRY

FLEA-BEETLE? (Haltica litizata Fall)

Louisiana T. H. Jones (February 14): Larvae of this beetle were noted at Pouchatoula on strawberry plants on this date. Most of the larvae were full grown and had entered the soil. Adults were very abundant on strawberries at Independence on this same date. These reports were made by Mr. C. E. Smith.

COTTON RED-SPIDER (Tetranychus telarius L.)

Louisiana T. H. Jones (March 17): Mr. C. E. Smith reports the red-spider as being present in injurious numbers quite generally in strawberry fields in Tangipahoa and Livingston Parishes from the middle of February up to the present date.

PEAS

PEA APHID (Illinoia pisi Kalt.)

California E. O. Essig (March 12): Indications are for a various pea aphid year. Many fields of early market peas in the San Francisco Bay region are already seriously infested.

R. E. Campbell (March 19): Through the kindness of Mr. R. S. Woglum, I am able to furnish you with the following localities in which purple vetch has been damaged by the pea aphid: Santa Paula and Fillmore in Ventura County; San Fernando and Alhambra in Los Angeles County, and La Habra in Orange County.

CUCUMBER

NEMATODES

Illinois C. C. Compton (March 20): Eelworms were seriously damaging cucumbers at Kankakee.

CANTELOUPEONION THRIPS (Thrips tabaci Lind.)

California R. E. Campbell (March 1): Several reports have been received during the past month of damage to young canteloupe vines under their frost protectors in the Imperial Valley. Growers are combating it with nicotine dust. No specimens have been seen, so the identifications have not been verified.

LETTUCECOMMON FIELD CRICKET (Gryllus assimilis Fab.)

California T. D. Urbahns (March 19): Heavy black soil about Hollister heavily infested with crickets, in all stages, very recently hatched to adults. The lettuce crop has been planted twice over a 60-acre patch and after starting to grow was completely destroyed each time by this cricket. It is now being planted for the third time. Applied poisoned bran mash on 60 acres. Results are still questionable. Approximately 200 acres are known to be infested.

LEAFHOPPERS (Jassidae)

New Mexico R. L. Middlebrook: Leafhoppers are very active and some complaint is coming in in regard to their activities on lettuce and late winter spinach. One of the most severe storms which we have had in this part of the country at this time of year occurred this week. The temperature dropped to 15°F. This froze practically all the lettuce and other green stuff which was up but had no appreciable effect upon the hoppers.

SOUTHERN FIELD - CROP INSECTS

COTTONBOLL WEEVIL (Anthonomus grandis Boh.)

Louisiana B. R. Coad (March 8): The regular annual examinations made by the Delta Laboratory have just been completed. These examinations are made to ascertain percentage of successful hibernations of the boll weevil and indicated that we may expect this spring a weevil emergence very much less than last year and probably slightly less than in 1916 and 1921. The emergence will just about attain the ten-year average.

Usually the weevils die in about equal numbers during each of the winter months but during the past winter there was but little mortality until the February blizzard. This was

undoubtedly due to the abnormally warm weather preceding the sudden drop in temperature.

In the States west of the Mississippi River a rather "spotted" infestation may be expected, due to the cotton leafworm eating the cotton leaves, defoliating the plants in limited areas.

Alabama W. E. Hinds (March 23): We are find^{ing} here at Auburn a very high percentage of boll weevils still alive in hibernation- 80 per cent on March 5.

CUTTING ANT (Atta texana Buck.)

Texas M. C. Tanquary (March 17): The cutting ant, Atta texana, is reported by Mr. R. R. Reppert, extension entomologist, as doing serious injury in several counties in central southwestern Texas from the region of Uvalde and Bexar Counties northward toward Dallas.

INSECTS ATTACKING GREENHOUSE AND ORNAMENTAL PLANTS

CHRYSANTHEMUM

CHRYSANTHEMUM GALL-MIDGE (Diarthronomyia hypozaea
F. Loew.)

New Hampshire P. R. Lowry (February and March): These midges have done considerable damage to young plants in the Agricultural College greenhouse at Durham, distorting and stunting many of the plants.

SNAPDRAGON

GREENHOUSE LEAF-TYER (Phlyctaenia ferrugalis Hubn.)

Massachusetts P. R. Lowry (February and March): This insect is reported from Salem and Swampscott as doing serious damage in greenhouses.

TULIP

TULIP APHID (Anuraphis tulipae Boyer)

California California Weekly News Letter, Vol. 5, No. 5 (March 10): "What is apparently the tulip aphid recently was taken on tulip bulbs arriving from Holland. Specimens have been forwarded to Washington for confirmation of our identification.

This aphid lives on the bulb between the scales and finds its way well into the interior parts. Specimens examined, where infestation was heavy, revealed the aphids on the embryonic blossom bud. Their manner of feeding undoubtedly prevents a normal growth and apparently results in a misshaped blossom even if it does not entirely prevent its development.

It is believed that further investigations will show this pest quite widespread in the State as it is hard to believe

that with all the tulips brought into California insect has not at some time been introduced. In fact, check bulbs planted in 1921 were infested with aphid but not being cognizant of the status of that particular aphid nothing further was thought of it. These recent developments lend weight to the belief that it was the tulip aphid.

FOREST AND SHADE - TREE INSECTS

YELLOW PINE

WESTERN PINE BEETLE (Deniroctonus brevicomis Lec.)

- California A. J. Jaenicke (December, 1922): This beetle killed 33,000,000 board feet of timber in 1921 over an area of 430,000 acres in the Modoc National Forest. Plans are now being considered to combat the pest on this area. The damage amounts to over \$100,000.
- J. M. Miller (December, 1922): This beetle killed 100,000,000 board feet of timber over an area of about 300,000 acres in the California National Forest during 1921. The loss amounted to at least \$300,000 and was very conspicuous, whole hillsides appearing red as though swept by fire.
- Oregon A. J. Jaenicke (December 1922): This insect killed 40,060,000 board feet of yellow pine valued at \$120,180 during 1921 on the area surrounding the control project in southern Oregon (Klamath and Lake Counties), covering 3,370 acres. This loss is not much above the normal and approaches one-fourth of one per cent of the stand each year.
- F. K. Keane (March 12): On the control project this insect killed 91,961,000 board feet of lumber in 1921, at an estimated value of \$275,883. This was determined by a 5 per cent cruise of the territory, which included 1,250,000 acres of forested land. A cooperative control project is now under way to curb this loss.

ELM

EUROPEAN ELM SCALE (Gossyparia spuria Modeer)

- Nebraska M. H. Swenk (March 10): The elm scale was injuring the trees in the park of one of our central Nebraska cities.
- Idaho Don B. Whelan (March 16): This insect is destroying many fine trees in the City of Boise. Spraying with miscible oil is now being done.

BOXELDER

BOXEEDER PLANT-BUG (Leptocoris trivittatus Say)

Nebraska M. H. Swenk (March 10): The boxelder plant-bug has been unusually numerous during the winter of 1922-23 in houses. Complaints began to be received early in December and continued throughout the winter, but became much more numerous during the past week or ten days, with the bugs beginning to resume their activity. We have, in fact, received more inquiries concerning the boxelder plant-bug than concerning any other insect pest during the period covered by this report.

MAPLE

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

New Mexico R. L. Middlebrook (March 6): A letter was received today from East Las Vegas where the county agent reports an extremely heavy scale infestation. An examination reveals that it is the cottony maple scale and is the only outbreak of any importance that we have had in this State.

MISCELLANEOUS FEEDERS

COTTONY-CUSHION SCALE (Icerva purchasi Mask.)

Texas M. C. Tanquary (March 17): The cottony-cushion scale has been reported as being present in destructive numbers in the City of Galveston. A correspondent sent specimens to this office and reports it as being present on ratana and bay tree and a plumbago.

FALL CANKERWORM (Alsophila pomataria Harr.)

New Jersey H. B. Weiss (March 23): Thousands of moths are appearing now and depositing eggs on forest trees in the vicinity of Mt. Paul, near Mendham.

MESQUITE BORER (Schizax senex Lec.)

New Mexico R. L. Middlebrook (January 24): This insect is devastating our mesquite, which is the principal fuel wood of this region.

PALE-MARKED ASH BORER (Eburia quadricepinata Say)

New Mexico R. L. Middlebrook (March 11): This insect was observed attacking locust trees in Dona Ana County.

INSECTS AFFECTING DOMESTIC ANIMALS

CATTLE

BITING LOUSE OF CATTLE (Trichodectes scalaris Nitzsch)

New Hampshire P. R. Lowry (March): This insect has been found on practically every animal examined about Durham. Much more numerous than last year.

BLOOD-SUCKING CATTLE LOUSE (Solenopotes capillatus Enderlein)

New Hampshire P. R. Lowry (January 10): Found on a few cattle in the vicinity of Durham.

New York R. W. Wells (February 15): Several head of cows were heavily infested with the blood-sucking louse as well as the more common H. eurysternus and H. vituli.

STABLE FLY (Stomoxys calcitrans L.)

Texas F. C. Bishopp (March 26): With the exception of a few short periods during the coldest weather the stable fly was present and annoying stock throughout the winter. During warm periods they were more abundant and troublesome than usual for winter periods.

HOUSE FLIES (Musca domestica L.)

Texas F. C. Bishopp (March 26): House flies have been active except for short periods during the entire winter. At times they were so numerous as to be bothersome in houses when screens were not kept closed.

BLACK BLOWFLY (Phormia regina Meig.)

Texas F. C. Bishopp (March 26): Owing to the mild winter the black blowfly was present in considerable numbers and much damage was done by it through its attack on live stock, especially following dehorning. In one instance following dehorning of a large number of cattle 100 per cent infestation was experienced. The freeze of March 19 (16°F. Dallas) appears not to have greatly reduced the number of adults.

HORN FLY (Haematobia irritans L.)

Texas F. C. Bishopp (March 26): The horn fly was present in small numbers on cattle in this vicinity (Dallas) throughout the winter, with the exception of short periods following the heaviest freezes. This was unusual as the pest usually disappears for a few months during the winter.

GREENBOTTLES (Lucilia sericata Meig.)

Texas F. C. Bishopp (March 26): Greenbottles were present about the packing houses in Dallas and Fort Worth most of the winter though they were considerably outnumbered by the black blowfly, P. regina. During March there was considerable increase in their numbers.

OX WARBLE (Hypoderma lineatum DeVill.)

New York R. W. Wells (February 15): Hypoderma appeared in the backs of cattle about February 15 in Orange County.

Texas F. C. Bishopp (March 26): Warbles were more abundant in cattle in north central Texas during the past winter than for several years, the maximum present in a number of animals observed being about ninety. Heel flies were active in north Texas throughout March though it is doubtful if they appeared in greater numbers than normal, partly due no doubt to the very low temperatures during the month.

CATTLE SCAB (Psoroptes communis Furst.)

California California Weekly News Letter, Vol. 4, No. 6 : (March 17): Fortunately we have no more cattle scab in our State.

CATTLE TICK (Margaropus annulatus Say)

California California Weekly News Letter, Vol. 4, No. 6 (March 17): We have been cleaning house of cattle diseases in California for a number of years and it is with a feeling of exultant pride that the cattlemen of this great State can point to the fact that Texas fever has been entirely cleaned out.

BROWN WINTER TICK (Dermacentor nigrolineatus Pack.)

Texas F. C. Bishopp (March 26): During the past winter many reports of the occurrence of this species in injurious numbers on horses and cattle in central and west Texas have been received. The species abounds throughout the mountain and plateau region and eastward through the rugged escarpment to the plains. A few specimens received from Dr. S. M. Valdez from Chiapas, Mexico, indicate that the species follows the mountains to southern Mexico.

SHEEP AND GOATS

SHEEP SCAB (Psoroptes communis Furst.)

California California Weekly News Letter, Vol. 4, No. 6 (March 17): On account of the presence of sheep scab infestation, effective immediately and until further notice shipments of sheep from

the State of Oregon into California for any purpose except for immediate slaughter have been prohibited, unless such shipments are accompanied by an inspection certificate.

COMMON GOAT LOUSE (Trichodectes climax Nitzsch)

New Hamp- P. R. Lowry (January 28): This insect was very common in a flock shire examined at Hookset, some individuals being very heavily infested.

DOGS

BROWN DOG TICK (Rhipicephalus sanguineus Latr.)

Texas F. C. Bishopp (March 26): The brown dog tick has been found in certain dog and cat hospitals. This together with the finding of a few infestations on local dogs and the presence of the species in all stages indicate that it has become fairly well established.

POULTRY

CHICKEN HEAD LOUSE (Lipeurus heterographus Nitzsch)

New Hamp- P. R. Lowry (March): Generally present but not as numerous shire as at this time last year.

POULTRY MITE (Dermanyssus gallinae Redi)

New Hamp- P. R. Lowry (March): These insects have been found on fowls shire in the daytime, often in considerable numbers, at both Durham and Hookset.

LARGE HEAD LOUSE (Menopon biseriatum Piaget)

New Hamp- P. R. Lowry (March): Common in all flocks examined at Durham, shire birds most heavily infested appearing unthrifty.

FEATHER MITE (Liponyssus silviarum Can. & Fahz.)

United States & Canada F. C. Bishopp and assistants (March 26): On account of the seriousness of the feather mite as a poultry pest it may be well to summarize the localities in which it has been found. It should be borne in mind that most of these infestations occurred in single flocks and eradication has been accomplished. The localities are as follows: Beltsville, Md.; Harvel, Ill.; Plattsburg, N.Y.; LaFayette, Ind.; Bloomfield, Ind.; Ithaca, N.Y.; Oxford, Ohio, and Port Dover, Ontario.

New Jersey F. C. Bishopp (March 26): The feather mite of chickens has been found to exist in a flock in Closter. The infestation attained considerable proportions before the matter was reported to the New Jersey Experiment Station, but through energetic control measures the pest seems to have been eradicated.

HOUSEHOLD PESTS AND INSECTS INJURIOUS
TO STORED PRODUCTS

GENERAL

Nebraska M. H. Swenk (March 10): Stored-grain pests continued active and injurious in a number of bins of wheat through November and the early part of December, 1922.

BEAN WEEVIL (Mylabris obtectus Say)

Maine E. M. Patch (March 17): Frequent complaints of the bean weevil have come in through the winter. Trouble with this pest seems to be increasing.

Nebraska M. H. Swenk (March 10): During November and early December there were some complaints of injury to stored beans by the bean weevil.

MEDITERRANEAN FLOUR MOTH (Ephestia kuehniella Zell)

Idaho Don B. Whelan (March 16): Heavy infestations to wheat in a seed store were reported from Burley.

DERMESTID LARVAE

Idaho Wakeland and Whelan (March 16): These insects were found infesting bran and mill feeds in a grain warehouse at Parma and ruined a stock of radishes and turnips in a storehouse at Burley.

WHITE ANT (Reticulitermes flavipes Kol.)

Louisiana T. H. Jones (March 3): Winged individuals noted issuing from wood and in flight at Baton Rouge on this date.

Texas M. C. Tanquary (March 17): An undetermined species of termite has caused a rather severe injury to young peach trees at Cameron, in Milan County.

GERMAN ROACH (Blattella germanica L.)

Nebraska M. H. Swenk (March 10): This insect has been complained of as a source of annoyance during the past winter.

THE INSECT PEST SURVEY BULLETIN

A periodical review of entomological conditions throughout the United States,
issued on the first of each month from April to November, inclusive

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May 1, 1923

No. 2

OUTSTANDING ENTOMOLOGICAL FEATURES IN THE UNITED STATES FOR APRIL, 1923.

In reviewing the general entomological data accumulated by the Survey during 1921 and 1922 and comparing these with the data so far received this year, it appears that the entomological season is about two weeks later than normal.

From present reports the indications are that the Hessian fly will not be a serious factor in this year's wheat crop over most of the important wheat-growing regions.

The chinch bug is still a threatening factor in the Ohio River region and in the Upper Mississippi Valley, the bugs having passed the winter successfully as far north as southeastern South Dakota.

The Great Plains false wireworm is again proving a serious pest in western Nebraska.

A telegraphic report has been received of a large brood of Mormon crickets now hatching in north-central Wyoming.

The codling moth wintered well in New York and Washington, despite the cold winter, which killed over 25 per cent of the larvae which were above the snow-line in the latter State.

Eggs of the several apple aphids were hatching as early as March 30 in the Ozark region of Arkansas; April 7 in southern Idaho; April 9 in Indiana; and April 20 in western New York.

Infestation of the fruit-tree leaf-roller is rapidly increasing in Idaho. This year the egg count indicates an increase of 300 per cent over last year's infestation.

The San Jose scale continues to be a serious factor in apple orcharding in New York, New England, and the Ohio River States. In Indiana the region of serious infestation is extending into the northern part of the State. This insect is also a very serious pest in northwestern Arkansas.

The pea aphid is seriously infesting the entire cannery pea section in Stanislaus County of California and a lighter infestation extends over the Santa Clara Valley. This insect is also doing considerable damage to alfalfa in the vicinity of Topeka, Kans. The Kansas infestation



is over a region where the growing of garden peas is rather extensive. Here the association of alfalfa and peas is suggested as being favorable for the multiplication of this insect. Aphid infestations were so serious in the Santa Clara Valley on spinach that seven canneries ceased canning this product this spring. The damage was not so much the infestation of the aphids as the presence of such enormous numbers of syrphid larvae that it was not possible to remove them from the spinach in the washing process.

Bruce's measuring worm is reported for the first time as being present in the Okanogan Valley of Washington State.

OUTSTANDING ENTOMOLOGICAL FEATURES IN CANADA FOR APRIL, 1923.

The spring in Canada is backward in most parts of the Dominion, with the exception of British Columbia, where the season is from two to three weeks in advance of last year. In parts of the Prairie Provinces it is expected that the farmers will be able to do very little work in the fields until about the first of May. In Quebec and the Maritime Provinces the spring is about two weeks later than last year. Unusually cold weather with much snow was experienced in Ontario during the first two weeks of April, but towards the end of the month a warm spell occurred and spring ploughing will be general by the first of May.

The pea weevil has shown an increase in numbers in certain sections of Ontario, during the past two years. In British Columbia this insect is reported from several sections which were previously uninfested. The latest report is from Lillooet, B. C., where there is a serious infestation of this insect.

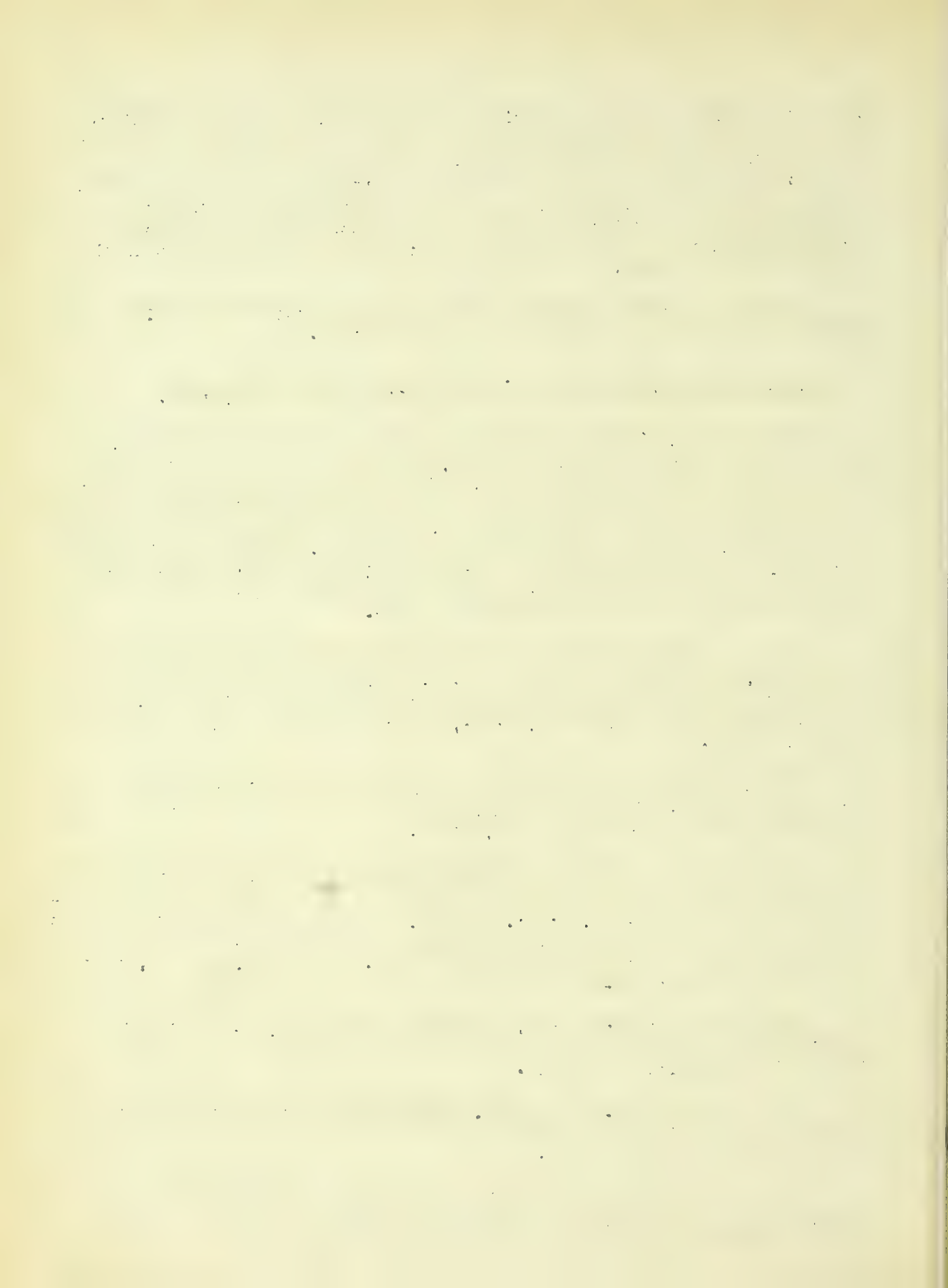
The striped cucumber beetle is becoming more prevalent in the Prairie Provinces. In Manitoba in 1922 it was common throughout the southern sections from Melite to Winnipeg.

The roadside grasshopper, Carnula pellucida Scudder, outbreak which occurred over an area of 3000 square miles of cattle range in the neighborhood of the Nicola Valley, B. C., in 1922, and which was probably the worst outbreak in the history of the province, is expected to re-occur this year over the same area but in a very mild form. It is feared, however, that some of the largest dry-farming sections will suffer severely.

The sugar-beet root aphid, Periphysus betae Doane, is judged by conditions as becoming increasingly prevalent on mangels in the Lower Fraser Valley, British Columbia.

The western wheat-stem sawfly, Cerphus cinctus Nort. is overwintering in large numbers in the Prairie Provinces. Indications point to severe damage during the coming year.

The Colorado potato beetle has experienced favorable winter conditions in the Prairie Provinces and everywhere is expected to emerge from its winter quarters the last two weeks of May.



The nose bot-fly, Gastrophilus veterinus Clark, is yearly assuming more importance in the Prairie Provinces and its distribution appears to be general.

The Hessian fly will cause loss in Manitoba it is feared. The area of infestation will doubtless occur in the territory north of the Canadian Pacific Railway line in areas of the greatest rainfall.

The eastern spruce bark-beetle, Dendroctonus piceaperda Kirby, has been active in two localities in Canada during the past few years. An outbreak of increased proportions is anticipated this year in the Gaspé Peninsula, in Quebec Province, due to the last year's brood concentrating on the weakened trees of a large burn. The Porcupine mountain outbreak in Saskatchewan almost completely died out last year and is not expected to cause any trouble this year.

The European corn-borer wintered successfully in Ontario, the very low mortality of 3 per cent being recorded in overwintering experimen

CEREAL AND FORAGE - CROP INSECTS

WHEAT

HESSIAN FLY (Phytophaga destructor Say)

- Illinois W. P. Flint (April 20): Adults of the Hessian fly have not yet been found in the fields.
- Indiana J. J. Davis (April 20): The Hessian fly is not abundant. Sowing at the right time has doubtless been effective in keeping down the Hessian fly in the northern half of Indiana. A late wave last fall is responsible for some fly infestation in southern Indiana. In Adams County in the northeastern part of the State we examined last fall (November 22) several fields sowed on different dates, scattered over the county. The results of these counts were as follows:

Date sowed	Result of count
Aug. 29	Infestation too heavy for definite count
Sept. 10	68.5 per cent of plants infested
12	33.8 per cent of plants infested
15	38.7 per cent of plants infested
23	26.6 per cent of plants infested
25	11.5 per cent of plants infested
27	1 per cent of plants infested
Oct. 1-10	0 per cent of plants infested

The fly-free date in the section of the county visited in September 26. The plants were not heavily infested, as the fly was comparatively scarce last fall.

In some counties of the State occasional early-sown wheat fields are to be found and these are invariably more or less heavily infested with the Hessian fly. Our five sowing plots gave the following fly infestation last fall.

Warrick, Ind.		Theoretical fly-free date September 22	
Date sown	Date of count	Plants infested	
		Per cent	
1922	1922		
Sept. 11	Dec. 2		53
14	2		50
17	2		20
20	2		9
23	2		0
27	2		0
Auburn, Ind.		Theoretical fly-free date September 22	
Sept. 15	Nov. 23		42
19	23		24
22	23		1
26	23		0
Oct. 2	23		0
Portland, Ind.		Theoretical fly-free date September 27	
Sept. 13	Nov. 21		83
18	21		50
23	21		7
27	21		0
Oct. 2	21		0
9	21		0
14	21		0
Lafayette, Ind.		Theoretical fly-free date, September 27	
Sept. 13	Nov.		1
19	Nov.		0
27	Nov.		0
Oct. 2	Nov.		0
18	Nov.		0
Terre Haute, Ind.		Theoretical fly-free date, October 2	
Sept. 16	Oct. 28		23
23	28		9
30	28		0
Oct. 2	28		0
5	28		0
12	28		0
19	28		0



Missouri

A. F. Satterthwait (April 10): No deposition of eggs. Pupation is just beginning within the flaxseed in St. Louis County. The abundance is greatly reduced from the fall of 1921.

R. C. Lange (April 11): Volunteer wheat in Franklin County is 100 per cent infested, and crop wheat is nearly as badly infested. This locality shows the heaviest infestation found in the St. Louis County neighborhood. Pupation is just beginning.

CHINCH BUG (Blissus leucopterus Say)

Indiana

J. J. Davis (April 20): We anticipate heavy infestations in a larger section of the State than last year. The center of infestation has moved northward. All counties in the northern half of the State are more or less infested. Bugs were active but not flying a few weeks ago. To date none have been observed flying from winter quarters.

South Dakota

H. C. Severin (April 7): Infestations exist in Bon Homme, Douglas, and Charles Mix Counties. The bugs came through the winter in good condition.

YELLOW-SUGAR-CANE APHID (Sipha flava Forbes)

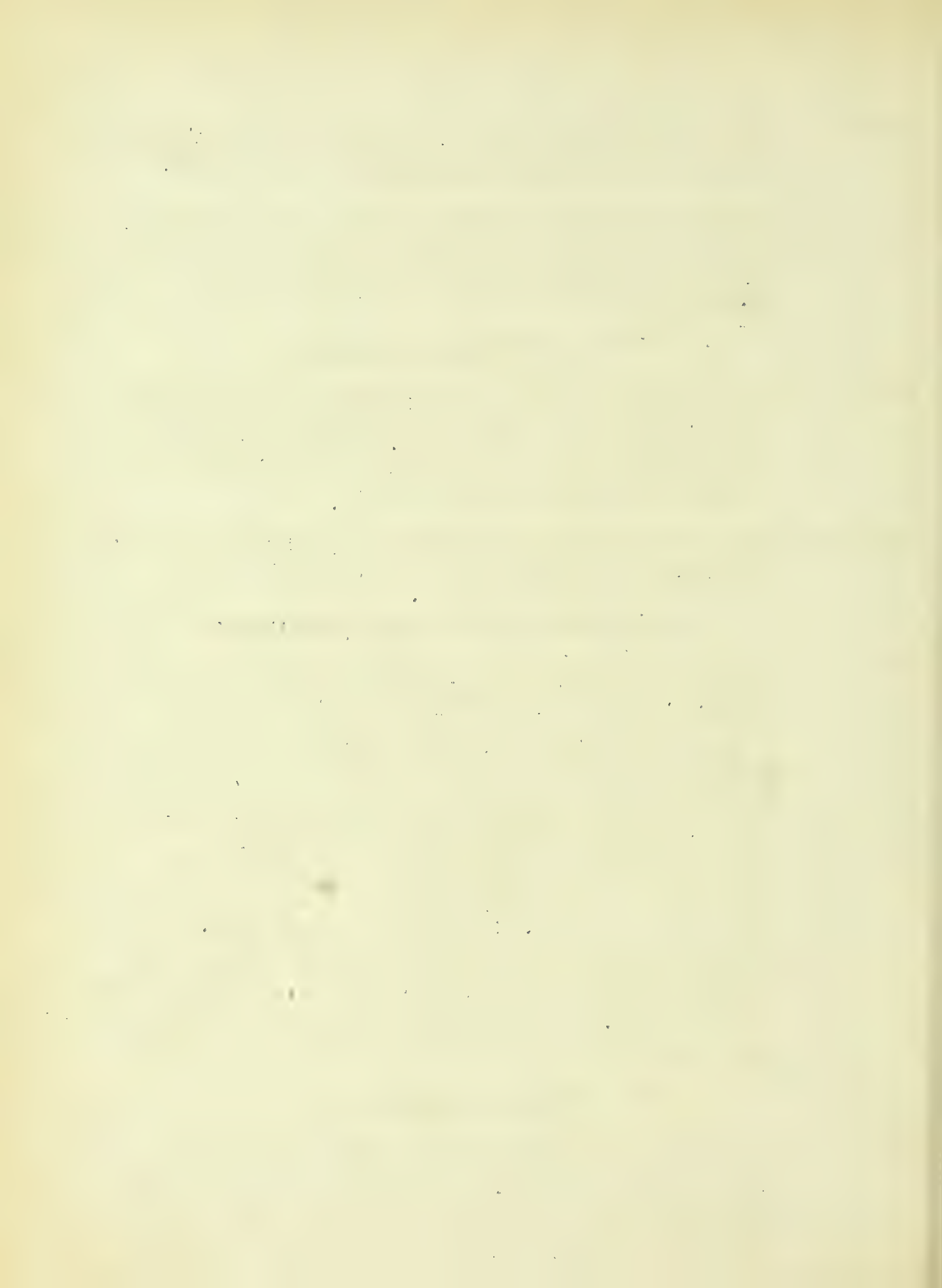
Texas

E. E. Russell (April 11): At Gainesville conditions are very different with regard to Sipha flava, for this pest occurs in from 50 to 75 per cent of the fields in this section. Often the colonies are very small, then again they get to be of good size, some of them affecting from 15 to 25 acres. While the grain is not so completely killed, as in the case of Toxoptera work, the stand is ruined in many cases and the remaining plants are spindling and sickly looking. In two fields of fall-sown wheat, about 100 acres, which were examined on Friday of last week, large colonies averaging from 15 to 20 feet in diameter occurred every few yards over the entire area. It would be safe to say that at least 50 per cent of the crop had already been injured, but the most discouraging thing in this connection is the fact that the parasites, except ladybugs, do not appear to be making much headway. I have never found more than 5 per cent to have been attacked by the true parasites, and in my examination of the two fields just mentioned I was not able to find a single one parasitized.

GREENBUG (Toxoptera graminum Rond.)

Kansas

G. A. Dean (April 17): Reporters who have been in south-central Kansas, looking into the greenbug situation, report that they have the farmers fairly well organized for plowing under the infested spots. In fact, many of the spots were plowed under before they left that part of the State. The



weather reports are for warmer, and if the weather conditions are favorable for good plant growth, and also for the increase of the predacious and parasitic enemies, I believe the greenbug has done all the injury it will do.

S. J. Hunter (April 20): On April 10 we received from Crystal Springs, in Harper County, a package of wheat infested with greenbugs. Mr. Beamer of this Department returned yesterday from that region and reports one 40 acre field infested with greenbugs, with a few dead spots appearing in the field. He found no hymenopterous parasites, but an abundance of ladybirds. He reports from 8 to 10 coccinellid larvae in 3 inches of drill row. In his judgment these predacious insects will prove more effective than any remedial measures we could institute. After an extended survey through Harper County he found only one other field of wheat in which they were present in appreciable numbers. The wheat is in an excellent condition, and, in his judgment, there will be no material loss.

Texas

E. E. Russell and C. H. Gable (April 20): In Wichita, Archer, Young, and Parker Counties a number of colonies of Toxoptera were developed. These spread to some extent and threatened some injury. At this time, however, parasites have practically exterminated the older colonies, and the new infestations are being so effectively controlled that little damage is anticipated, and the farmers, in general, feel that there is promised a better grain crop than for a number of years. The situation in Collins, Grayson, Denton, and Cooke Counties is much the same, except that the control by parasites has been much more complete, so that in many fields previously infested it is difficult to find any of the aphids.

Oklahoma Ernest E. Scholl (April 25): We have just assisted in conducting a very successful dusting experiment on greenbugs in the heavily infested greenbug field seven miles west of Stillwater in which nicotine dust was used. The results so far show 90 per cent mortality with no bad effects on lady beetles.

New Mexico W. E. Emery (April 3): This aphid is attacking certain varieties of fall wheat in Dona Ana County, doing considerable damage, spots being nearly entirely killed. About 60 per cent of the crop is damaged.

R. Middlebrook (April 11): Since writing you last, I note a heavier percentage of damage by the greenbug to the wheat, the increase being about 10 per cent, making the total damage 20 per cent in the several fields of wheat which I have under observation.

WHEAT STRAWWORM (Harmolita grandis Riley)

Missouri H. E. Roberts (April 6): In Jefferson County adults appeared more abundant about the straw pile than over the field, though generally distributed. Wheat followed wheat; the stubble was not

well plowed under. Infestation is moderate, compared with the average year. Adults are at large with no parasites. The weather is sunny and hot. (April 11): Three fields were examined at Pacific, Franklin County. Infestation is severe. Adults are at large, minuta form. The weather is sunny and warm.

Idaho Claude Wakeland (April 16): Adults are emerging from old stubble of spring-planted wheat of 1922. The crop is damaged 55 per cent, by counting stems.

WIREWORMS (Elateridae)

Texas M. C. Tanquary (April 23): Mr. R. R. Reppert reports injury by wireworms to wheat and sorghums in west Texas.

GREAT PLAINS FALSE WIREWORM (Eleodes opaca Say)

Nebraska M. H. Swenk (April 18): The Great Plains false wireworm has again this spring shown considerable capacity for doing injury in the wheat fields. During the first week in April it was reported working in the wheat fields of Hitchcock County, some fields being very badly infested, and also in Perkins County, where in wheat fields that followed summer-fallowed land the false wireworms completely destroyed the plants, in the vicinity of Grant. The next week similar reports were received from Cheyenne County, where this pest spoiled many stands of wheat this spring. During the last week in March further reports of injury in the fields of Nance County, where trouble was experienced last November, were received.

CUTWORMS (species unknown)

Texas O. G. Babcock (April 17): Almost every bunch of grain, horehound, and many other weeds, as well as grass plots, at Sonora shows the presence of cutworms. Owing to heavy and cool rains, damage does not show as yet. No study has been made as to the parasitism of the worms.

MORMON CRICKET (Anabrus simplex Hald.)

Wyoming Stewart Lockwood (Telegram dated April 29): Reports that the Mormon cricket is hatching in serious numbers at Thermopolis, Wyoming, over an area of approximately 2,000 acres. The crickets are just hatching at this time.

Idaho D. B. Whelan (April 16): Eggs are beginning to hatch in Franklin County.

CORN

TWELVE-SPOTTED CUCUMBER-BEETLE (Diabrotica 12-punctata Oliv.)

Louisiana T. H. Jones (April 2): At Baton Rouge a few young corn plants

have been noted that showed injury due to larvae. Larvae are very common at the roots of scattered volunteer oat plants in the same field. These larvae are of various sizes, some full-grown and preparing to pupate. As many as 55 larvae were found at the roots of one stool of oats.

BUDWORM (Salicicida viridescens Fab.)

Georgia W. F. Turner (April 12): I have received reports that "budworm" damage to corn has been severe for the last two years. (Corn is not yet planted).

ALFALFA AND CLOVER

PEA APHID (Illinoia pisi Kalt.)

South Philip Luginbill (March 26): Parasites and predacious enemies
Carolina are not yet active at Columbia.

Florida F. S. Chamberlin (April 19): This insect is causing some damage to clover throughout the region of Quincy.

TARNISHED PLANT-BUG (Lyrus pratensis L.)

Idaho Claude Wakeland (April 9): Adults were present in alfalfa crowns before they had really begun to show green. Adults probably hibernate in the soil in alfalfa fields.

ALFALFA WEEVIL (Phytonomus posticus Gyll.)

Idaho Claude Wakeland (April 11): At Parma adults are feeding to some extent on growing alfalfa, which is now about 4 inches tall. Copulating pairs are abundant and a few fresh eggs are found in dead stems.

Nevada C. W. Creel (April 12): Alfalfa is from 2 to 4 inches high. Weevils are active and oviposition has commenced.

CLOVER-LEAF WEEVIL (Hypera punctata Fab.)

Illinois W. P. Flint (April 20): Larvae of Hypera punctata are still very small.

LESSER CLOVER-LEAF WEEVIL (Phytonomus nigrirostris Fab.)

Illinois W. P. Flint (April 20): Small numbers of the clover bud weevils have migrated to the clover fields, but not all of these insects have left hibernating quarters.

Indiana J. J. Davis (April 20): Adults are rather numerous this spring.

CLOVER-SEED CHALCID (Bruchophagus funebria How.)

Idaho D. B. Whelan (April 3): Injured seed found in recleaned seed was sent to the laboratory of the seed analyst from Ada and Canyon Counties. Recleaned seed shows less than 1 per cent injury.

CLOVER ROOT-BORER (Hylastinus obscurus Marsh.)

Idaho D. B. Whelan (March 30): In 1922 the first crop of clover hay from a field was 22 tons. At the second cutting there was not enough to cut. I visited the field March 30 and found very few plants growing. Some of these were injured but evidently had overcome the injury. Countless numbers of beetles were found in clover roots that died last fall. The locality of the infestation was Meridian, Ada County. The crop was damaged to the extent of 90 per cent.

GIANT SKIPPER (species unknown)

Illinois J. H. Bigger (April 1): A live larva was found hibernating in a stalk of sweet clover at Kinderhook.

A BYRRHID (Amphicyrta sp.)

California E. O. Essig (March 9): Last year adults of Amphicyrta were taken in the act of destroying a considerable amount of pasture vegetation, including grasses and weeds.

FRUIT INSECTS

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

- New York P. D. Rupert (April 14): The larvae appear to have wintered well and can be found very readily in Dutchess County.
- P. J. Chapman (April 14): Larvae are numerous in Genesee County.
- Washington E. J. Newcomer (March 27): In the eastern part of this State December temperatures of 15° to 18° below zero killed from 25 per cent to 35 per cent of the wintering worms above the snow line. In spite of this there are at present many more live worms in orchards than usual, on account of the heavy infestation last year.

GREEN APPLE APHID (Aphis pomi DeG.)

- New York P. D. Rupert (April 16): In Dutchess County eggs are moderately abundant and general. (April 14): Present in large numbers over practically all of Dutchess County.
- G. E. Smith (April 6): Found abundant in two orchards in Orleans County.
- E. W. Pierce (April 14): The eggs seem to be rather abundant in Ontario County.
- P. J. Parrott (April 20): Hatching of the grain aphid has been observed at Geneva.
- Indiana J. J. Davis (April 20): The majority of aphids on apple examined are the apple-grain species. A few, 2 to 10 per cent, are Anhis sorbi, and exceptional individuals Aphis pomi.
- Idaho Claude Wakeland (April 10): Newly hatched young are collecting on terminal buds of apple trees at Parma, buds are bursting, and an occasional leaf is beginning to unfold.

APPLE-GRAIN APHID (Rhopalosiphum prunifoliae Fitch)

- New York G. E. Smith (April 6): This species was found abundant in two orchards in Orleans County.
- T. C. Murray (April 11): Eggs are just beginning to hatch in Suffern, Rockland County.
- P. D. Rupert (April 14): Present in large numbers over practically all of Dutchess County. (April 16): Eggs are moderately abundant and general in Dutchess County.
- E. W. Pierce (April 14): The eggs seem to be abundant in Ontario County.

THE JOURNAL OF THE
ROYAL ANTHROPOLOGICAL INSTITUTE
1901
The Journal of the Royal Anthropological Institute, founded in 1871, is a quarterly publication devoted to the study of man in all his aspects. It contains original researches, reviews, and reports on the progress of anthropology in various branches, including physical anthropology, ethnology, and social anthropology. The journal is published by the Royal Anthropological Institute, which was founded in 1871 and is now one of the leading scientific organizations in the world. The journal is published in four parts per year, and each part contains several articles. The journal is published in English, and is available to members of the Royal Anthropological Institute. The journal is also available to libraries and individuals who wish to purchase it. The journal is published by the Royal Anthropological Institute, which is a charitable organization. The journal is published in four parts per year, and each part contains several articles. The journal is published in English, and is available to members of the Royal Anthropological Institute. The journal is also available to libraries and individuals who wish to purchase it. The journal is published by the Royal Anthropological Institute, which is a charitable organization.

Indiana B. A. Porter (April 9): This species has hatched in large numbers.
J. J. Davis (April 20): The majority of aphids on apple examined are the apple-grain species. A few, 2 to 10 per cent, are Aphis sorbi, and exceptional individuals Aphis pomi.

Arkansas A. J. Ackerman (April 5): Newly-hatched aphids first were observed on March 30 at Bentonville. Only an occasional apple bud is open at this date.

ROSY APPLE APHID (Anuraphis roseus Baker)

New York E. W. Pierce (April 14): The eggs seem to be abundant.
P. D. Rupert (April 14): Present in large numbers over practically all of Dutchess County.
G. E. Smith (April 6): Found abundant in two orchards in Orleans County.
P. J. Parrott (April 25): The first appearance of newly-hatched nymphs has been noted at Geneva.

Indiana B. A. Porter (April 9): This species has hatched in large numbers.
J. J. Davis (April 20): The majority of aphids on apple examined are the apple-grain species. A few, 2 to 10 per cent, are Aphis sorbi, and exceptional individuals Aphis pomi.

Iaho Claude Wakeland (April 7): Newly-hatched young are collecting on terminal buds of apple trees at Parma. Buds are just bursting.

WOOLLY APPLE APHID (Eriosoma lanigerum Hausm.)

New York R. F. Illig (April 16): A report has been received from Ontario.
P. D. Rupert (April 16): Damage to some young orchards is very noticeable in Dutchess County.

APHIDIDAE

Massachusetts A. I. Bourne (April 20): From Essex County, in the northeastern section of the State, a report which was made on the 11th of April stated that very few of the early stem mothers of plant-lice have been noted as having appeared on the buds. (April 23): In a letter from Pittsfield, in Berkshire County, it is reported that there appear to be fewer plant-lice eggs than normally are found. The weather has been so cold, however, up to the present time that no definite information can be secured. It is still too early for plant-lice to hatch in northeastern Essex County, as there are still no signs of buds breaking and leaves coming out.

Indiana B. A. Porter (April 4): The first newly-hatched aphids have been observed at Washington.

Washington E. J. Newcomer (March 27): Judging from the very small number of winter eggs which can be found, apple aphids will not be serious this spring.

FRUIT-TREE LEAF-ROLLER (Archips argyrospila Walk.)

- New York P. D. Rupert (April 16): A few egg masses have been observed on apple in Dutchess County.
- E. W. Pierce (April 17): Eggs have been noticed in orchards in every section of Ontario County.
- P. J. Chapman (April 14): Eggs have been observed in several orchards in Genesee County.
- Idaho Claude Wakeland (March 16): We have recently been making some egg counts on this insect, preparatory to experimental spraying, and find that in the orchard in question the average increase of infestation for the year is a little more than 300 per cent. On one tree only there was a decrease in the number of egg masses, and the extremes varied to as great an increase as 1,400 per cent. Our method of determining the rate of infestation and increase is to count all egg masses on a given branch or portion of a tree and to remove all eggs that have hatched on previous years. (March 30): Count of the egg masses on 11 trees at Lewiston showed an average of 28 old egg masses and 64 new egg masses per tree. The infestation this year is approximately 238 per cent of that of any previous year.

BRUCE'S MEASURING WORM (Rachela bruceata Hulst)

- Washington A. L. Melander (April 20): We have just received specimens from Tonasket in the Okanogan Valley of what was thought to be the bud moth. It proved, however, to be Bruce's measuring worm. This material was sent in by Thomas Thorson, who previously had sent specimens of last year's apples bearing stings very similar to those caused by codling moth larvae. His statement about the stings was that the stings were prevalent in unsprayed as well as in sprayed orchards, and were attributed to the summer generation of the bud moth. The measuring worm was now sent in as the spring generation of the bud moth. We have not been able to diagnose what is responsible for the stings on the mature apples, although the codling moth and the lesser apple worm are both present in his region. This is the first record we have in Washington of the occurrence of Bruce's measuring worm.

TENT CATERPILLAR (Malacosoma americana Fab.)

- New York P. J. Chapman (April 14): Eggs have been observed in several orchards in Genesee County.
- E. W. Pierce (April 17): Eggs have been noticed in neglected orchards in Ontario County.
- Massachusetts A. I. Bourne (April 23): The apple tent caterpillar appears to be very scarce at Pittsfield, Berkshire County; few, if any, egg masses are to be found except on wild cherries or on scattered, uncared-for apple trees. A letter from northeastern Essex County reports "millions" of apple tent caterpillar egg masses, greater numbers than have been seen for years, and on April 19 one or two egg masses were found to be just beginning to hatch.



Georgia J. B. Gill (April 5): The first hatched egg-mass of the apple-tree tent caterpillar was observed on March 10 at Thomasville. In this section the nests are now commonly seen on wild plum and wild cherry trees.

Arkansas W. J. Baerg (April 1): Reported from Fayetteville on wild cherry as more abundant this year.

RED-BANDED LEAF-ROLLER (Eulia velutinana Walk.)

Pennsylvania S. W. Frost (April 23): The first adults of the red-banded leaf-roller issued April 16. Egg laying commenced on April 23. The eggs are now abundant in the orchards.

BUDMOTH (Imetocera ocellana D. & S.)

Indiana B. A. Porter (April 24): Larvae noted feeding in unfolding leaves, at Vincennes.

SPRING CANKERWORM (Paleacrita vernata Peck)

Illinois W. P. Flint (April 20): Adults of the spring cankerworm have been observed on the wing on several days during the month.

FALL CANKERWORM (Alsophila pometaria Harr.)

New York W. T. M. Forbes (March 25): Heavy flight observed; also seen on various dates at Ithaca.

New Jersey T. J. Headlee and A. A. Lance (April 2): Numerous males and females have been observed in a wooded area at Bernardsville.

CLIMBING CUTWORMS (Lampra spp.)

Washington E. J. Newcomer (April 14): In the Yakima Valley these cutworms are much less numerous than last year, being of little consequence at this time.

APPLE MAGGOT (Rhagoletis pomonella Walsh)

New York C. R. Crosby (January 28): Infested Rose Sweet apples have been received from Wayne County. (April 13): The entire crop in a large orchard at Hartsdale was ruined last fall.

TREE CRICKET (Oecanthus sp.)

Pennsylvania S. W. Frost (April 23): The punctures of a species of tree cricket were found abundantly in Franklin County. Many of the punctures are accompanied by a fungus infestation, probably fire blight.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

New York C. R. Crosby (April 6): Trees are badly infested at Lyons. (April 10): A small orchard is badly infested at Riverhead. (April 12): An orchard is lightly infested at Hartsdale.

A. L. Pierstorff (April 14): Abundant in most orchards in Chautauqua County.

P. D. Rupert (April 14): Very prevalent in many places and can be found in nearly every orchard in Dutchess County. (April 16): Moderately abundant in most orchards.

F. H. Bond (April 14): Has been reported in several well sprayed orchards in Oswego County.

P. J. Chapman (April 7): Does not appear to be very prevalent even in neglected orchards in Genesee County.

R. F. Illig (April 16): Has been reported from Sodus and Williamson.

E.W. Pierce (April 17): A little has been found in most orchards but it is not serious in well sprayed orchards in Ontario County.

Indiana

J. J. Davis (April 20): This insect continues as the most serious apple insect and is now extending its range of destructiveness to northern Indiana. It has a comparatively low winter mortality. Many growers are using the new lubricating-oil emulsion. Some are reporting trouble with this material. Apparently this is frequently due to the use of lime-sulphur barrels to contain the stock emulsion, or to tanks having been previously used for lime-sulphur. In other cases the emulsion was, apparently, improperly made or the water used to dilute the stock solution was of such a nature that it caused a separation. In our spray tests the miscible oils and the emulsion continue to give satisfactory controls, the dry and liquid lime-sulphurs being less satisfactory.

B. A. Porter (April 25): Winter mortality has ranged at Vincennes from 25 per cent to 65 per cent, depending mainly on condition of wood.

Arkansas

A. J. Ackerman (April 5): The San Jose scale has caused more damage to orchards of northwestern Arkansas in the last two years than any other pest during the history of apple growing in this section. A material reduction in the scale infestation in Benton County was effected with the dormant lubricating-oil emulsion spray applied last spring. During the dormant season of 1922-23 about 95 per cent of the orchards of Benton and Washington Counties have been sprayed with lubricating-oil emulsion for this scale.

Idaho

Don B. Whelan and Claude Wakeland (April 14): Apple trees are worst infested, but the scale is attacking many other kinds of fruit trees, shade trees and shrubs in Ger and Canyon Counties. Infestations this year are the worst that have occurred in years. Horticultural inspectors say 1922 was the worst year they have ever experienced in scale control.

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

Maine

B. Alexander (April 7): Trees of McIntosh red apple are nearly covered at Richmond.



- New York C. R. Crosby (March 7): Infested twigs have been received from Rochester. (April 2): Trees are badly infested at Hinckley. (April 9): At Cambridge apple trees are badly infested.
- R. F. Illig (April 9 and 12): Reports have been received of infestations at Sodus Point and Newark.
- E. W. Pierce (April 14): The oyster-shell scale is prevalent in most orchards in Ontario County. (April 17): Prevalent throughout the County.
- A. L. Pierstorff (April 14): Abundant in many orchards in Chautauqua County.
- P. J. Chapman (April 14): Generally prevalent in Genesee County.

EUROPEAN RED MITE (Paratetranychus nilosus Can. & Fanz.)

- New York C. R. Crosby (March 29): A specimen has been received from Binghamton.
- P. D. Rupert (April 16): Eggs are very abundant in Dutchess County.
- Pennsylvania S. W. Frost (April 23): Eggs of the red-spider are abundant in Adams County this spring. The first eggs hatched on April 21.
- Indiana B. A. Porter (April 25): Winter eggs fairly abundant in the vicinity of Vincennes, on apple and peach.
- Washington E. J. Newcomer (March 27): Winter eggs are much more numerous than usual in the Yakima Valley.

TARNISHED PLANT-BUG (Lycus pratensis L.)

- New York P. J. Chapman (April 14): Adults have been found hibernating under the bark of old apple tree in Genesee County.
- Illinois J. H. Bigger (March 27): Adults have just been seen flying out of hibernation near Jacksonville, Morgan County.

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

- New York C. R. Crosby (April 4): Apple trees are badly infested at Dansville.

THREE-CORNERED TREEHOPPER (species undetermined)

- Washington E. J. Newcomer (March 27): This undetermined species deposits winter eggs in the twigs of the apple, often severely damaging young trees. The hoppers, undoubtedly, feed on the cover crops and weeds.

PEAR

PEAR THRIPS (Taeniothrips inconsequens Uzel)

- New York A. B. Buchholz (April 16): The first thrips was noticed on the buds at Hudson.



Oregon

E. J. Newcomer (April 6): This insect was first noted in the Walla Walla Valley in 1922; some damage was done, but it is not yet serious. On April 6, 1923, one or two adults were found on every open blossom, and some egg punctures were noted in the young fruits at Freewater.

PEAR PSYLLA (Psylla pyricola Foerst.)

Wagoner

New York

C. C. (April 4): Adults are out and mating is taking place at Milton and Highland. (April 10): Oviposition was observed for the first time at Middlehope and Marlboro.

P. D. Rupert (April 14): Adults are becoming active, and in some of the warmer orchards there is considerable oviposition. (April 16): Adults are very abundant in Dutchess County.

G. E. Smith (April 2, 6, 7): Adults came out on April 2 and were observed abundantly on the 6th and 7th in Orleans County.

R. F. Illig (April 5): First adults are out at Sodus.

E. W. Pierce (April 12): Adults were found active in Ontario County. (April 17): Quite abundant in the eastern part of Ontario County.

A. B. Buchholz (April 14): Egg laying has been abundant and active in some cases in Columbia County.

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

Georgia

O. I. Snapp (March 31): These beetles are feeding considerably on peach blossoms, especially where the trees are near a garden. Damage has also been noted to the young terminal leaves of year-old pear and peach trees at Fort Valley.

PEACH

PEACH BORER (Aegeria exitiosa Say)

Georgia

O. I. Snapp (April 21): Results from paradichlorobenzene have been uniformly excellent in the Georgia peach belt this year. Great quantities were used and, from reports, all growers are well pleased with the results. Some few who failed to make the application last fall are trying spring treatments. These spring treatments were given about April 1.

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia

O. I. Snapp (April): The number of adult plum curculios that survived the winter of 1922-23 in central Georgia is apparently very large. They are now appearing from hibernation in numbers. 51.7 per cent of the beetles confined in a hibernation cage, with Bermuda grass sod, on September 19, 1921, appeared from hibernation during March. The appearance of the beetles from hibernation in other cages during March was as follows: Dried leaves 46.5 per cent, Spanish moss 34.2 per cent, pine needles 29 per cent, trash 21.2 per cent, and bare soil 5.2 per cent. The winter has been mild,

with the exception of two periods of short duration. During one of these the minimum temperature recorded was 18°F. and during the other 23°F. (April 15): The appearance of beetles from hibernation cages, with various types of hibernating quarters, to April 15 inclusive was as follows: Bermuda grass 67 per cent, Oak leaves 61.5 per cent, Spanish moss 48 per cent, pine needles 38 per cent, sticks and trash 22.5 per cent, and bare ground (no hibernating quarters) 6.75 per cent. (April 21): The first larva of the season was found in peach on April 18, which is several weeks later than last year. This is undoubtedly due to the very cool spring, which has held back the development of the fruit and also retarded the appearance of the adults from hibernation.

Jarring records show that the curculio is much less abundant to date this year than last, and there is an enormous reduction as compared with 1921. The results of the three years of the curculio suppression campaign are now becoming very evident.

Louisiana T. H. Jones (April 4): The freeze of March 20 killed all fruit and bloom. Few eggs were noted today in fruit that has set since that date, and 1 adult was observed. (April 14): Fruit containing small larvae is common on trees today, but only a few "drops" have been noted.

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

Georgia O. I. Snapp (March 31): These beetles are feeding considerably on peach blossoms, especially where the trees are near a garden. Damage has also been noted to the young terminal leaves of year-old pear and peach trees.

Wm. F. Turner (April 12): Very abundant in some orchards in Jasper and Morgan Counties, feeding on foliage; no real damage as yet. I fear severe injury to corn later.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Georgia O. I. Snapp (April): Crawlers of the San Jose scale have been collected from peach trees near Fort Valley each month during the past winter. This proves that in the latitude of central Georgia some of the scale insects pass the winter in the full-grown stage.

PEACH AND PLUM SLUG (Eriocampoides amygdalina Rohwer)

Louisiana T. H. Jones (April 4): The larvae of this sawfly did considerable damage to peach foliage at Baton Rouge last year. Adults have been noted to be common in the field today, resting on peach foliage, and what are apparently eggs are common on the undersides of leaves.

CHERRY

TERMITES (Reticulitermes flavipes Kol.)

Nebraska M. H. Swenk (April 16): The larger roots of several 3-year-old cherry trees which died last summer were being mined by termites in Franklin County - a rather unusual instance of insect injury that came to notice from March 10 to April 15.

PLUM

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia J. B. Gill (April 5): On March 27, while inspecting some plum thickets near Thomasville, I observed that egg punctures of the plum curculio were quite common on the small wild plums. On April 2 I had occasion to examine a good batch of wild plums, finding many eggs of the curculio in the fruit. Most of the eggs had not hatched at this time, but an occasional larva of considerable size was observed, indicating that some eggs must have been hatched for at least a week.

BROWN PLUM APHID (Hysteroneura setariae Thos.)

Georgia O. I. Snapp (April 10): The rusty brown plum aphid is very bad at the present time on plum trees in several home orchards around Fort Valley.

CURRENT

CURRENT APHID (Myzus ribis L.)

New York P. J. Parrott (April 19): Hatching of aphids has been observed at Geneva.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

New York J. B. Palmer (April 4): Part of one planting was killed out at East Bloomfield. (April 9): Bushes are badly infested at Ithaca.

C. C. Wagoner (April 6): The scale is present wherever observations were made along the Hudson River. (April 13): The scale is worse usually on Fay than on Perfection, and least on Wilders. Infestations have been found in Ulster County along the Hudson River.

PECAN

PECAN SHUCKWORM (Laspeyresia caryana Fitch)

Georgia J. B. Gill (April 5): Larvae of the pecan shuckworm have already been found attacking pecan buds and shoots.

PECAN BUD MOTH (Proteopteryx bolliana Sling.)

Georgia J. B. Gill (April 5): Larvae of the pecan bud moth have already been found attacking pecan buds and shoots.

PECAN CASE-BEARER (Acrobasis nebullella Riley)

Georgia J. B. Gill (April 5): Larvae of the pecan leaf case-bearer have been emerging from their hibernacula during the last 10 days and are now attacking the unfolding buds of certain important varieties of pecan, especially the Frotscher and Schley. Up to this date the larvae have not begun to attack the buds on Stuart trees, which

variety is one of the latest to put forth its foliage in the spring. Many pecan growers in this section sprayed their orchards for this insect during the late summer and early fall and they have succeeded satisfactorily in controlling this pest. According to our observations, some sprayed orchards will show more or less damage because of careless spraying.

The hibernating larvae of the pecan leaf case-bearer have been found to be highly parasitized by Secodella acrobasis Cwfd., which is considered a very effective parasite against this pest. Great numbers of adults of this species have been reared from material collected in this general locality. The adult parasites have also been observed frequently on pecan trees in the large orchards of Thomasville and vicinity.

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Georgia J. B. Gill (April 5): A few adults of the southern green stink-bug have been collected on pecan trees since the last week in March.

TWIG GIRDLER (Oncideres cingulata Say)

Louisiana T. H. Jones (April 11): A correspondent from Dubach sent in twigs showing injury.

GRAPE

GRAPE LEAFHOPPER (Typhlocyba cores Harr.)

New Mexico W. E. Emery (April 7): These insects were caught around the vineyard in Dona Ana County, more abundantly on the plant known as Marguerite.

GRAPE SCALE (Aspidiotus uvae Comst.)

Indiana J. J. Davis (April 20): Several reports from southern Indiana indicate the importance of this scale in some sections.

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

Indiana J. J. Davis (April 20): From recent indications this insect will again be abundant and destructive the coming season. Our experience with the dormant sprays has shown that the insect can be thoroughly controlled by the use of miscible oils at standard strengths.

GOOSEBERRY

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

New York C. C. Wagoner (April 6): The scale is present wherever observations were made along the Hudson River in Ulster County. (April 13): A small amount of scale has been found on Columbia gooseberries in Ulster County along the Hudson River.



CITRUS AND SUBTROPICAL FRUITS

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

- Texas T. C. Barber (April 5): At Brownsville damage is slight but increasing. Adults are plentiful in a few restricted localities where they are known to occur.
- Louisiana T. H. Jones (April 14): A few adults, the first of the season, were noted today on citrus trees heavily infested with the species at Baton Rouge.

PANAMERICAN PLATYPUS (Platypus compositus Say)

- Florida W. W. Yothers (April 5): It may be of interest to entomologists to know of a so-called outbreak of ambrosia beetles on orange trees last fall. The species was Platypus compositus, an account of which is given by Hubbard on page 14, of Bulletin 7, new series, of the Division of Entomology, "Some Miscellaneous Results of the Work of the Division of Entomology." The excessive rains last summer raised the water table in and around many groves in DeSoto County. This condition was very injurious to many citrus trees which were planted on the lower locations and, no doubt, has resulted in the death of some trees. The last of October and first of November there was considerable interest on the part of growers in the ambrosia beetles, which they claimed were killing their trees. An examination showed that the trees were really injured by excessive water and the beetles had come in as a secondary factor. In many of the trees the sap was fermenting at the time of the visit. We recommended immediate drainage and other measures to improve the health and growth of the trees. We also recommended painting of the bodies or trunks of the trees with undiluted fish-oil soap. It is not known to what extent the trees have died or what effect the recommendations have had upon the further attacks of the beetles.

COTTONY-CUSHION SCALE (Icerya purchasi Mask.)

- Texas T. C. Barber (April 5): Damage at Brownsville to citrus trees is slight at present. We have observed two restricted areas of infestation in this locality, but infestation is very light. They are particularly dangerous, however, in view of heavy recent plantings of young trees.

ORANGE BASKETWORM (Platoeceticus gloverii Pack.)

- Florida W. W. Yothers (April 5): A serious outbreak of what I determined as the orange basketworm was reported to me. I understood from the reports that this had ruined a crop of Valencias. This pest usually follows beggarweed or some other legume, and since the damage had already been done before the report was sent in, no recommendations were given or experiments conducted.

PAPAYA FRUIT-FLY (Toxotrypana curvicauda Gerst.)

- Florida G. F. Moznette (April 5): This species has not been as abundant this past winter as during former winters, and, apparently, the excessive drought this past winter has had a decided influence on this species.

MANGO SHIELD SCALE (Coccus acuminatus Sign.)

Florida G. F. Moznette (April 5): This scale has been very abundant this past winter on mango trees, particularly where the trees have not been properly sprayed with the oil-emulsion applications during the winter. This is especially true in groves where Bordeaux spraying is generally practiced in the bloom which apparently promotes scale infestation by the friendly fungi.

destroying

DICTYOSPERMUM SCALE (Chrysomphalus dictyospermi Morgan)

Florida G. F. Moznette (April 5): The Dictyospermum scale was abundant on avocado trees in some nurseries.

PYRIFORM SCALE (Protopulvinaria pyriformis Ckll.)

Florida G. F. Moznette (April 5): This insect has played the usual amount of damage in avocado groves.

ORANGE LEAF-NOTCHER (Artipus floridanus Horn) and

CITRUS ROOT WEEVIL (Pachnaeus litius Germ.)

Florida G. F. Moznette (April 5): Has been very abundant in some localities doing some damage to the young growth of avocado trees in young groves. In some instances the young growth of young Guatemalan avocados was observed completely stripped and the weevils went so far as to gnaw severely into the young shoots.

AVOCADO LEAF-ROLLER (Gracilaria perseae Busck)

Florida G. F. Moznette (April 5): This leaf-roller is commencing to work in considerable numbers in young groves where trees are putting out a good spring flush.

AVOCADO BLOSSOM THRIPS (Frankliniella cephalicus Craw.)

Florida G. F. Moznette (April 5): During the latter part of March, as well as at this time of the year while the avocado is in full bloom and setting its fruit, this thrips has been exceedingly abundant, and in a number of localities has materially damaged the bloom. The Pollock and Trapp varieties and some seedlings resembling these varieties are especially subject to the work of this species. In some instances it is estimated that the damage to bloom is from 60 to 70 per cent.

AVOCADO LEAF THRIPS (Heliothrips haemorrhoidalis Bouche')

Florida G. F. Moznette (April 5): During the period when the avocado red spider is working, this thrips is also to be found in some sections of southern Florida which are favorable for it to carry on its depredations. These localities are situated generally near the ocean, bays, or inlet areas. Avocados growing on the keys are more generally attacked by this thrips. This species was abundant in the above sections during the past winter and the weather conditions apparently were likewise favorable. This thrips also contributes to the drain of sap from the dormant foliage and often weakens a tree.

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AVOCADO LEAFHOPPER (*Empoasca nitens* Ball)

Florida G. F. Moenette (April 5): This pest has been very abundant during the past winter, especially in those sections where proper spraying was not practiced. It likewise contributes to the drain on the dormant foliage of the avocado.

AVOCADO RED-SPIDER (*Tetranychus vothersi* McGregor)

Florida G. F. Moenette (April 5): This mite was unusually abundant in avocado groves in southern Florida during the past winter. This was due apparently to the excessive drought and generally ideal weather conditions favorable for its depredations during December, January, and February. During these months there was a total of 1.64 inches of rain. A number of groves in which control measures were not practiced showed a great deal of damage and the foliage was greatly scorched as a result of the work of this red-spider. It is essential that the dormant avocado leaves, laden as they are with stored-up plant food, should be protected from the ravages of mites, as it is this foliage which materially sustains the bloom and aids in the proper setting of the fruit.

AVOCADO WHITEFLY (*Trialeurodes floridensis* Q.)

Florida G. F. Moenette (April 5): This species is now making its appearance in avocado groves with the spring flush of growth.

COCONUT MEALYBUG (*Pseudococcus nipae* Mask.)

Florida G. F. Moenette (April 5): This mealybug, an enemy of the coconut palm in southern Florida, is likewise a serious avocado pest in some sections of southern Florida. It has been very abundant in southern Florida this past winter and is now working on the young growth. It also attacks the avocado at the stem and while the fruit is not setting and at times there is a considerable drop of fruit from its attacks.

TRUCK - CROP INSECTS

POTATO

POTATO BEETLE (*Leptinotarsa decorata* Say)

Indiana J. J. Davis (April 20): The potato beetle is on the increase in the northern half of Indiana.

Louisiana W. H. Jones (April 2): Adults were found in the potato patch today at Baton Rouge and Denham Springs. This is our first record of their appearance in the field this year.

Texas E. C. Bishopp (April 23): Potato beetles appeared in considerable numbers during the latter part of March, but it is doubtful if they are more numerous than usual at Dallas.

FLEA-BEETLES (Halticinae)

California A. O. Larson (April 17): Flea-beetles are damaging young potatoes in the seed beds in the Chino section of California.

WIREWORMS (Elateridae)

California A. O. Larson (April 17): In the Chino section of California wireworms are doing considerable damage to potatoes and vegetables in general.

PEAS

PEA APHID (Illinoia pisi Kalt.)

California Roy E. Campbell (April 15): Practically the entire 2,150 acres of cannery peas in Stanislaus County are seriously infested with the pea aphid. For two weeks there has been a heavy flight of winged adults. Mild infestations are found on most of the peas in the Santa Clara Valley, and some late plantings are now becoming badly infested.

Kansas J. W. McColloch (April 24): The pea aphid has made its appearance again in this State, and is causing damage to alfalfa in the vicinity of Topeka, Kans. A survey of conditions made yesterday showed that in one field approximately 20 acres are severely injured, and that the aphids are spreading to adjoining fields. Pea aphids were also noticed on garden peas near these alfalfa fields, and it is possible that there is some association between their presence on garden peas and the alfalfa. This is a rather large trucking district, and peas are grown quite extensively. Dr. R. C. Smith, who made the survey, was inclined to think that the damage to alfalfa might be associated with this, since we have had no other reports of pea aphid injury to alfalfa in the State this year.

SPINACH

APHIDIDAE

California Roy E. Campbell (April 15): All seven canneries in the Santa Clara Valley stopped canning spinach yesterday because there were so many syrphid larvae in the spinach which it was impossible to remove in the washing process, and have got into the canned product.

ARTICHOKES

ARTICHOKE PLUME MOTH (Platyntilia sp.)

California T. D. Urbahns (March 21): M. F. Barnes writes that worms are causing considerable alarm and damaging artichokes in the Arroya Grande district. Adults reared show it to be a plume moth, Platyntilia sp. Considerable parasitism has been noticed in material sent to the State insectary.

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S O U T H E R N F I E L D - C R O P I N S E C T S

TOBACCO

CORN-ROOT WEBWORM (Crambus caliginosellus Clem.)

Tennessee Official Record U. S. D. A., Vol. II, No. 14 (April 14): The occurrence of heavy infestations of sod webworms in tobacco fields during the past season has given an excellent opportunity for testing poisoned bait under field conditions, and it has been shown repeatedly that an ordinary unsweetened poisoned bait flavored with nitrobenzene is capable of bringing about a mortality of from 80 to 94 per cent of the larvae in heavily infested fields. The main species concerned were the tobacco Crambus and Acrolophus popeanella Clemens, although it was noted that several other species of Crambus larvae were present and were attracted to the bait.

GREEN JUNE BEETLE (Cotinis nitida L.)

Tennessee A. C. Morgan (April 19): This insect is reported ruining some beds of tobacco plants.

Kentucky A. C. Morgan (April 19): This insect is reported ruining some beds of tobacco plants.

BUDWORM (Heliothis virescens Fab.)

Florida F. S. Chamberlin (April 19): The tobacco budworm has begun to infest newly set tobacco. This pest is always present throughout the entire growing season in the southern cigar-wrapper district.

TOBACCO FLEA-BEETLE (Epitrix parvula Fab.)

Florida F. S. Chamberlin (April 19): Fewer overwintered flea-beetles have been observed this season than has been the case for the past several seasons. This is apparently due to effective control measures practiced by the tobacco growers this past year.

COTTON

WINGLESS MAY BEETLE (Phyllophaga sp.)

Texas M. C. Tanquary (April 23): Wingless May beetles, which did considerable damage to cotton in several places in Texas last year, are reported by Mr. R. R. Reppert as being present in numbers in northwest Texas near Plainview.

I N S E C T S A T T A C K I N G G R E E N H O U S E

A N D O R N A M E N T A L P L A N T S

AMARYLLIS

NARCISSUS BULB FLY (Merodon equestris Fab.)

New York C. R. Crosby (March 3): Specimens have been received. This insect bores long tunnels through the bulbs, causing considerable damage. The determination was made by Dr. Johannsen.

HOUSE PLANTS

A BLACK-HEADED MAGGOT (Sciara hastata Johan.)

Nebraska M. H. Swenk (April 18): In a case of reported injury to house plants by small black maggots, the culprit when reared proved to be a Sciara, probably S. hastata Johan.

SOVBUG (Armadillidium vulgare Latr.)

Texas F. C. Bishopp (April 23): Reports of sowbug injury to young garden stuff and flowers have been received recently from Dallas.

TULIP

CUTWORMS (Noctuidae)

Idaho D. B. Whelan (April 6): Cut off tulips as fast as they come through the ground.

LILIES

W-MARKED CUTWORM (Noctua clandestina Harr.)

Indiana H. F. Dietz (April 18): The W-marked cutworm has been found in a small planting of Madonna lilies at Indianapolis, eating off the heavy flowering stalks, which are at this time about 6 inches high. The entire plant is therefore ruined for the season and a few insects can do serious damage all out of proportion to their numbers.

CHRYSANTHEMUM

CHRYSANTHEMUM GALL MIDGE (Diarthronomyia hypogaea F. Loew)

Indiana H. F. Dietz (April 23): A number of serious infestations of the chrysanthemum gall midge have been found in Indiana greenhouses during February and March. These have been the result of the buying of a large number of plants during the spring of 1922 on the part of Indiana florists. The plants came from widely separated parts of the United States and for the most part were new varieties. Most of the outbreaks occurred in greenhouses that had previously been freed of the midge and in which no midges were found in 1920 or 1921. Several cases, however, occurred in greenhouses that had never before been infested because the florists had not bought any stock since 1917, until the spring of 1922. All outbreaks this year were eradicated by spraying the plants with black leaf 40 1 fluid ounce; fish-oil soap, 4 ounces; and water, 4 gallons, every three days over a period of six weeks.

FOREST AND SHADE - TREE INSECTS

MISCELLANEOUS FEEDERS

GIPSY MOTH (Porthetria dispar L.)

Massachusetts A. I. Bourne (April 23): There appear to be fewer gipsy moths than during the last few years.



BROWN-TAIL MOTH (Euproctis chrysorrhoea L.)

Massachusetts A. I. Bourne (April 20): In regard to the brown-tail moth there is reported a heavier infestation along the Ipswich River and apparently a maximum abundance in the towns of Boxford and Ipswich. The general impression is that the pest is increasing markedly over the last few years. (April 20): One observer in eastern Middlesex County reported finding but three or four nests on 1,200 young bearing apple trees, which would indicate at least that the pest, in this particular section, does not promise to be as abundant as normally.

TENT CATERPILLAR (Malacosoma americana Fab.)

Massachusetts A. I. Bourne (April 20): In the northern section of the county the tent caterpillar would appear to us possibly waxing more abundant every year, as one report states that infestation is discouragingly heavy, although in some sections not quite as bad as last year. It is impossible to state just how serious this will be this season, as none of the egg masses have hatched yet. In eastern Middlesex County the tent caterpillar is apparently holding its own, and, judging from the number of egg masses seen, will be fully as abundant as last year.

FALL CANKERWORM (Alsophila pometaria Harr.)

New Jersey H. B. Weiss (March 26): Adults are out in large numbers. Eggs are being laid on shade trees.

LARGER CHESTNUT WEEVIL (Balaninus proboscideus Fab.)

West Virginia Monthly News Letter, Bureau of Entomology, U. S. D. A., No. 107 (March, 1923): The life history of the larger chestnut weevil, Balaninus proboscideus Fab., is entirely different from that of the lesser chestnut weevil, B. algonquinus Casey, the beetles being present only for about two or three months in late summer and autumn.

LESSER CHESTNUT WEEVIL (Balaninus algonquinus Casey)

West Virginia Monthly News Letter, Bureau of Entomology, U. S. D. A., No. 107 (March, 1923): Mr. Fred E. Brooks, in charge of the French Creek, W. Va., station, communicates the interesting observation that beetles of the lesser chestnut weevil, Balaninus algonquinus Casey, are perpetually present on the trees during the growing season, the adults of one generation maturing in the ground before those of the preceding generation have ceased oviposition on the trees.

BOXELDER

BOXELDER PLANT-BUG (Leptocoris trivittatus Say)

- Indiana J. J. Davis (April 20): Several reports have been received within the past month from housewives complaining of this insect. It has been unusually numerous in some localities.
- Nebraska M. H. Swenk (April 18): The boxelder plant-bug has continued to be the subject of many inquiries during the period here covered - March 10 to April 15.

BOXELDER TWIG-BORER (Proteopteryx willingana Kearf.)

- Nebraska M. H. Swenk (April 18): Complaints of borers in boxelder trees were received.

WALNUT

BORERS

- Nebraska M. H. Swenk (April 18): Complaints of borers in walnut trees have been received.

ELM

EUROPEAN ELM SCALE (Gossyparia spuria Moench)

- Idaho D. B. Whelan (April 9): This insect is reported from Godding.

ELM BORER (Saperda tridentata Oliv.)

- Nebraska M. H. Swenk (April 18): Complaints of borers in elm have been received.

INSECTS AFFECTING DOMESTIC ANIMALS

CATTLE

HORN FLY (Hematobia irritans L.)

- Texas O. G. Babcock (April 17): The horn fly has been increasing in numbers during the past two weeks in west Texas. Prospects are good for a fairly heavy infestation next month.
- Texas D. C. Parman (April 26): Adults at Uvalde increased considerably up until the latter part of January and the freezes practically killed all of the adults present, but at no time were they entirely absent. The increase has been quite noticeable during the last two weeks, especially south in the sandy country.
- Texas F. C. Bishopp (April 23): During the last month there has been a steady increase in the number of horn flies on cattle. They are about normal in number at the present time, the average ranging in the neighborhood of 50 per animal in Dallas.

STABLE FLY (Stomoxys calcitrans L.)

- Texas F. C. Bishopp (April 23): The stable fly has increased considerably in numbers in Dallas during the last month and is now very annoying to all classes of live stock.

BLACK BLOWFLY (Phormia regina Meig.)

- Texas F. C. Bishopp (April 23): The black blowfly is fully as numerous as is normal, and infestations of cattle following late dehorning are common. This species makes up about 80 per cent of the flies about abattoirs.
- O. G. Babcock (April 17): Several cases of wool maggots starting have been noted, following the wet weather that has prevailed for several days. The prospects are good for a severe outbreak in west Texas of this pest. Several sheep men are shearing now to avoid the trouble.

GREEN-BOTTLE FLY (Lucilia sericata Meig.)

- Texas F. C. Bishopp (April 23): This species has been comparatively scarce thus far this spring in Dallas. Only a few adults are seen about dead animals, and they constitute less than 5 per cent of the flies about slaughter houses.

SCREW WORM (Chrysomya macellaria Fab.)

- Texas D. C. Parman (April 20): Adults have been present all winter at Uvalde and cases of worms have been found in most herds at all times. Adults were abundant 60 miles south on February 13. The increase in adults has been very slight to date (April 20), on account of cool, wet weather and late freezes.



F. C. Bishopp (April 23): Adults are beginning to appear in considerable numbers in north Texas, but no cases of infestation of live stock have been reported. Around packing houses flies are numerous, this species making up about 10 per cent of the total.

OX WARBLE (Hippodamia lineatum DeVill.)

Texas F. C. Bishopp (April 23): Emergence of adults of this species appears to have been about normal, as indicated by cage tests this spring. The season for adult activity was apparently longer than usual. The development of the late-dropped larvae was probably held in check by the late spring. The last captured was on April 10, about 10 days later than normal.

WINTER TICK (Dermacentor albipictus Pack.)

Maine and Wyoming F. C. Bishopp (April 23): Reports have come to the field station of the Bureau at Dallas, Tex., of the occurrence in considerable numbers of the winter tick, or ell tick, on moose in the Penobscot (Maine) district, and on elk in the Jackson Hole (Wyoming) country. There has been some death loss among the herds in each case, and part of this may be attributed to lowered vitality due to gross infestation of this tick.

POULTRY

TROPICAL FOWL MITE (Liponyssus bursa Berlese)

New York R. Matheson (January 12): Found on plain Polish White hens at Ithaca, and at Closter, N.J.

CHICKEN MITE (Demanyssus gallinae Redi)

Texas O. G. Babcock (April 17): In all hold-over infestations the common red or roost mite of chickens has increased in enormous numbers in west Texas. Sitting hens are practically driven off the nests. The outbreak is general.

F. C. Bishopp (April 23): About the usual amount of annoyance and losses in Dallas due to the presence of chicken mites is being felt this spring.

WING LOUSE (Lipectus variabilis Nitzsch)

Texas O. G. Babcock (April 17): Very rare infestations of this pest are occurring in west Texas.

HOUSEHOLD PESTS AND INSECTS INJURIOUS
TO STORED PRODUCTS

BEANS

BEAN WEEVIL (Mylabris ohtectus Say)

New York C. R. Crosby (February 19): Infested beans have been received from Lockport, also from Port Leydon.

SEED CORN

DEPRESSED FLOUR BEETLE (Palorus depressus Fab.)

Idaho Claude Wakeland (March 30): This insect is causing slight injury in seed stock of the Pure Seed Company at Lewiston.

SEED PEAS

PEA WEEVIL (Mylabris pisorum L.)

Idaho Claude Wakeland (March 30): The pea weevil is present in greater or less abundance nearly every year. Seed dealers fumigate locally raised seed every year.

MISCELLANEOUS

CADELLE (Tenebroides mauritanicus L.)

Nebraska M. H. Swenk (April 18): The normal number of reports of injury to stored grain by the cadelle have been received this spring, in contrast to the abnormally large number of reports during the spring of 1921 and that of 1922.

POWDER-POST BEETLE (Lyctus linearis Goeze)

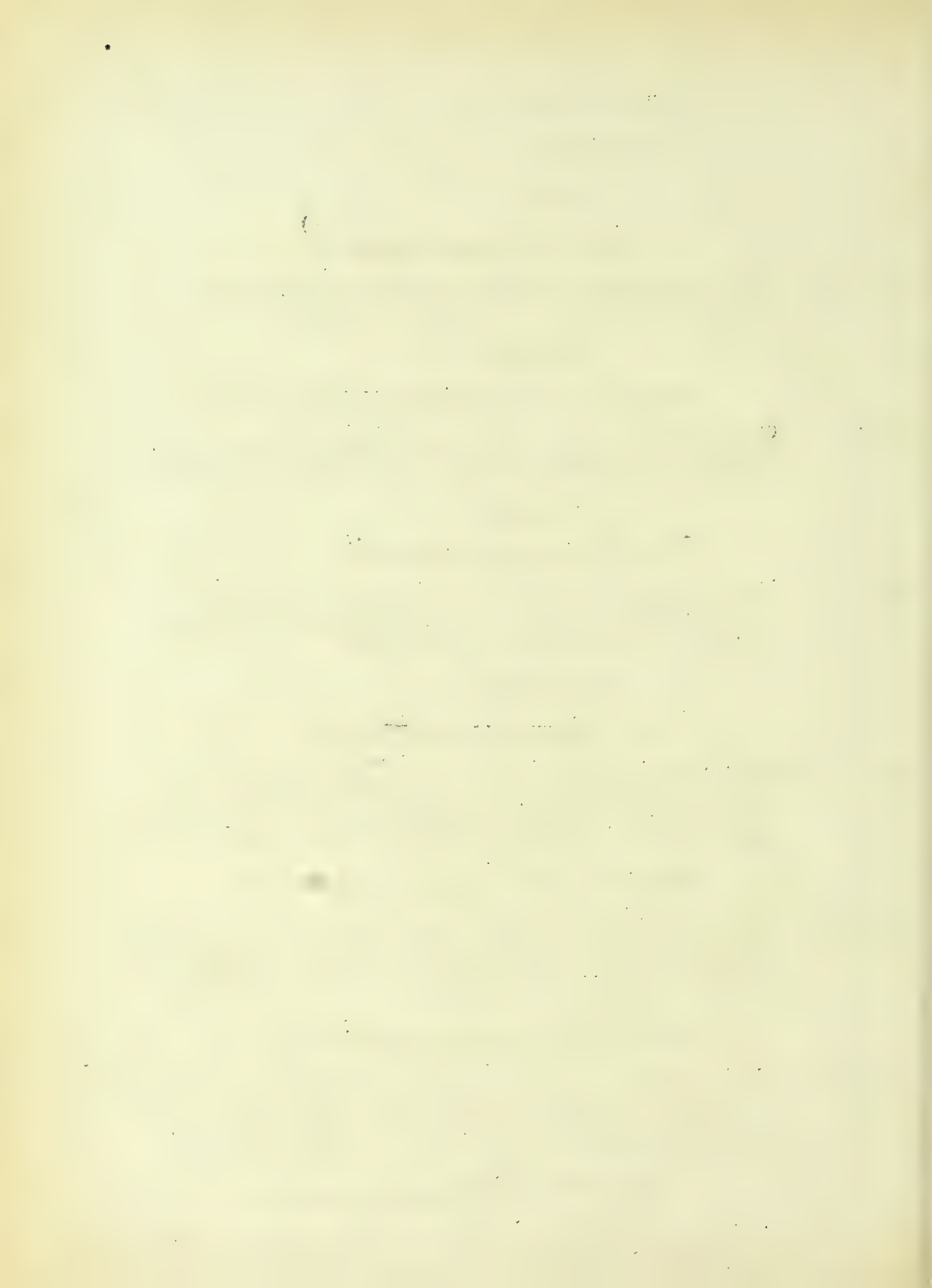
Nebraska M. H. Swenk (March 18): Powder-post beetles seriously injuring the oak flooring of a house in Saline County furnished a rather unusual instance of insect injury during the period here covered - March 10 to April 15.

A BACK SWIMMER (Notonecta undulata Say)

Nebraska M. H. Swenk (March 10): An instance of natural ice in a spring-fed pond near Hay Springs, Nebr. being ruined by the presence of Notonecta undulata Say and larvae of Stratiomyia and Odontomyia was brought to our attention during February.

ARGENTINE ANT (Iridomyrmex humilis Mayr)

Texas F. C. Bishopp (April 23): The cool spring has held the Argentine ant somewhat in check, but during the last two weeks a good many reports of annoyance have been received from Dallas.



THE INSECT PEST SURVEY BULLETIN

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INSECT PEST SURVEY BULLETIN

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OUTSTANDING ENTOMOLOGICAL FEATURES IN THE UNITED STATES FOR MAY, 1923

Throughout the greater part of the chinch bug belt the bugs were in flight during the latter part of April and the first week in May. Infestations are reported as quite heavy in the southeastern part of Kansas and northeastern part of Oklahoma. Conditions are reported as about normal in Missouri, and a little above normal in Nebraska, Indiana, Illinois, and Ohio.

The Hessian fly is reported as being practically controlled this year in Ohio and Illinois. Rather severe infestations are reported from parts of Iowa and from southeastern Nebraska, and the fly is also reported as being on the increase again in Missouri.

Rather severe wireworm injury is reported from Nebraska, Missouri, Iowa, and Washington State.

The pea aphid as a pest to both alfalfa and garden peas has been reported as much more than normally destructive in Missouri, Kansas, California, tidewater Virginia, Kentucky, Michigan, Iowa, and the western part of Oklahoma.

Heavy grasshopper outbreaks are already indicated in parts of Texas and Montana.

The apple aphid situation during May was not serious throughout the greater part of the eastern fruit belt. The green apple aphid was reported as abnormally abundant in Georgia, while the rosy apple aphid was reported as doing some damage in sections of Indiana and in the western part of Arkansas.

An unusual infestation of the fruit-tree leaf-roller appears likely in Cache County, Utah.

The apple-tree tent-caterpillar is appearing in unusual numbers throughout the New England and the Middle Atlantic States as far south as Virginia.

Good results on control of the San Jose scale with lubricating-oil emulsion are reported from Missouri and Illinois.

Experiments carried on in Georgia seem to indicate that no damage is done to peach trees from 3 to 5 years old by the use of $3/4$ of an ounce of paradichlorobenzene for a period of 28 days. Excellent results from the use of this insecticide in commercial peach orchards are reported.

The Mexican bean beetle is reported from Lee County, Ala., 50 miles south of the known infested area in 1922, and has been reported from the eastern part of Mississippi, a State which was not known to be infested last year.

The bean leaf-beetle is unusually abundant in Maryland, Illinois, and Mississippi, in some places doing considerable damage to garden beans.

Unusual damage by the striped cucumber beetle is reported from Long Island, N. Y., tidewater Virginia, Maryland, Kentucky, Louisiana, Mississippi, and New Mexico.

The boll weevil is present in threatening numbers in parts of Texas and Mississippi. The winter mortality was much higher during the past winter than during the winter of 1921-22 in Oklahoma.

The tobacco flea-beetle is reported as seriously injuring seed beds in Kentucky and Maryland.

The periodical cicada, Brood XIV, is appearing in scattering numbers in parts of Maryland, and a single individual was taken at Maywood, Va. Brood XXII is appearing in a full emergence in the four southwestern counties of Mississippi.

The yellow-fever mosquito is appearing unusually early this year in parts of Louisiana. This pest has also been reported from Galveston and Houston, Tex.

OUTSTANDING ENTOMOLOGICAL FEATURES IN CANADA FOR MAY, 1923.

The close of May finds the season still two weeks later than 1922 in central and eastern Canada but as much earlier in the West and Pacific Coast sections. In Alberta wheat seeding was about complete by May 15, being somewhat earlier than normal owing to the soil moisture conditions while plant growth and insect development are about as usual. In Nova Scotia the season is later than at any time during the past ten years.

Stem mothers of the raspberry aphid, 'Aphis rubiphila Patch', which is one of the most important factors in the dissemination of raspberry mosaic, a disease very prevalent in northern Ontario, are more plentiful than usual in the raspberry plantations of the Niagara District.

The pear-leaf blister mite is extremely prevalent on apples this season in the Okanagan Valley, British Columbia. Its spread on apples has been phenomenal during the past two years; pears in the same orchards commonly being left uninfested.

The glassy cutworm, 'Sidemia devastator Brace', is common and widely distributed in the vicinity of Saskatoon, Saskatchewan, this year. The larvae are found feeding on the roots of the wild barley, a weed of cultivated pasture lands.

The wireworm, 'Agriotes manicus Say', is the most numerous injurious species in the Dartmouth vegetable-growing area of Nova Scotia.

The forest tent caterpillar, 'Malacosoma gamma Stretch', which defoliated forty square miles of aspen poplar in the Moose Mountain Forest Reserve, Saskatchewan, in 1922, is present again in large numbers and the entire Reserve is threatened with serious defoliation. The outbreak will apparently be general throughout a large part of Southern Saskatchewan and Alberta.

In many sections in the Similkameen and Okanagan Valleys of British Columbia crickets (Decticinae) have hatched in considerable numbers this year. The coulee cricket, Peranabrus scabricollis Scud., and the Mormon cricket, Anabrus simplex var. maculatus Caudell, formerly recorded for these sections by the finding of an occasional specimen, are present this year in noticeable numbers.

Additional reports of injury to spruce by the Eastern spruce bark-beetle, Dendroctonus piceaperda Hopk., have been received from the northern part of the Gaspe Peninsula in the Province of Quebec. An extensive infestation by this species has been developing slowly in the central part of this Peninsula for several years. It is of special interest that this section, the only large area in Eastern Quebec which escaped the recent spruce budworm outbreak, is the only one in which serious bark-beetle injury has appeared in recent years. Similar injury to large white spruce in northern Manitoba and Saskatchewan, investigated last season, is apparently decreasing in intensity.

CEREAL AND FORAGE - CROP INSECTS

WHEAT

CHINCH BUG (Blissus leucopterus Say)

- Ohio H. A. Gossard (May 11): Weather conditions have been rather favorable for the development of chinch bugs and since there were plenty of them last year we expect they will attract some attention.
- Indiana H. F. Dietz (May 19): A large flight of the overwintering adults of this insect took place at Indianapolis on May 1.
- J. J. Davis (May 22): Chinch bugs are numerous in wheat fields in many parts of the State but are rather inactive on account of the cool weather.
- Illinois W. P. Flint (May 18): A general flight of chinch bugs from winter quarters occurred from April 24 to May 1. Large numbers of bugs can be found in the wheat at the present time. The infested area extends from Henderson County in western Illinois and Cook County in eastern Illinois, south to Union, Johnson, and Pope Counties. The weather has been very cool for the past two weeks. Sufficient numbers of bugs are present in this area to cause serious damage during the coming season.
- Nebraska M. H. Swenk (May 28): On May 21 chinch bugs were beginning to appear commonly in the wheat fields of Gage County, and a few were to be seen in the fields as far north as Cass County.
- Missouri L. Haseman (May 8): The first bugs at Columbia were observed on the wing April 21 and again April 28 and during the week of April 29 to May 5 were observed in Howard County. (May 22): Chinch bugs apparently wintered safely and by the first of May had begun migrating. To date wheat fields in Central Missouri show rather light infestation, but in some parts of the State farmers report heavy infestations of winged bugs.

A. F. Satterthwait (May 14): Chinch bugs were in flight at Pacific on April 11 (R. C. Lange, observer), and were in copulation at the same place on May 7. Numbers have been small since April 2, when the temperature was 20°F.

Kansas

J. W. McColloch (May 3): In southeastern Kansas corn and sorghums are up and the bugs are attacking these crops. Migration was later than usual this year owing to the backward spring. (May 3): Chinch bugs have been flying in large numbers the last few days and becoming established in wheat and other small grains.

Oklahoma

E. E. Scholl (April 24): The observation on this insect showed the air full of chinch bugs on the wing from winter quarters along a ravine to wheat fields. The flight was northward. Locality, 7 miles west of Stillwater, in Payne County. Many more were observed than last month. (May 9): A chinch bug survey made last week showed that these insects are very numerous in the northeastern part of Oklahoma. There are considerably more insects present where the fields were not burned thoroughly last winter. Wheat growers of that part of this State are now convinced that thorough burning is a fine chinch bug control measure.

HESSIAN FLY (Phytophaga destructor Say)

Ohio

H. A. Gossard (May 11): In the few fields of wheat that were sowed early last fall before the fly-free date there is an abundance of Hessian fly, but such fields are so few that they will not affect the general situation, which is better than it has been during the last two years in Ohio with reference to the Hessian fly. No eggs have yet been found at Wooster or at Chillicothe.

Illinois

W. P. Flint (April 20): Adults of the Hessian fly have not yet been found in the fields. (May 18): The first adults of this insect were seen at Urbana on April 30. Spring brood of the fly will apparently be very light; but little damage to wheat is expected from this brood.

Iowa

F. D. Butcher (May 7): On May 5, in Polk County, the adult flies were emerging in large numbers. On 16 stalks having 2 or 3 blades there were 92 eggs.

F. A. Fenton (May 16): A field trip taken May 5 by Dr. C. J. Drake and Fred Butcher revealed the fact that Hessian flies were swarming in the wheat fields, and our cage experiments indicate that they are emerging in large numbers on favorable days. Present indications are that there will be serious Hessian fly damage wherever wheat was planted before the fly-free date.

C. N. Ainslie (May 26): In fields near Onawa, which were very heavily infested last October, I find that the spring infestation is almost 100 per cent. At least every plant was infested with larvae, many of them mature and many in the flaxseed stage. From 4 to 8 larvae were common in a single tiller.

Nebraska

M. H. Swenk (May 28): In spite of the dry summer and fall of 1922, the Hessian fly has by no means dropped out of sight. It seems fairly well distributed over southeastern Nebraska, and in the eastern parts of Cass and Otoe Counties has so injured the already thin stand of wheat in many fields, where it was working last fall, that they are being plowed up and planted to corn. Farmers in this section sowed their wheat earlier than they should have done last fall, in many cases, and such fields are the ones chiefly injured. In a number of fields in that section examined early last week from 75 per cent to practically 100 per cent of the stems were affected, some affected stems containing 30 or more larvae, so that the fields promised anywhere from a quarter of a normal crop to nothing at all. They were just beginning to transform into puparia on May 21.

Missouri

A. F. Satterthwait and assistants (May 14): First eggs were found at Meramec Highlands and at Pacific April 19; first field adults at Pacific April 19. Eggs are scarce. Some larvae of the first brood were nearly fully grown at Pacific on May 9.

L. Haseman (May 22): The Hessian fly is apparently on the increase again. Fall infestations in the southern part of the State and along the northern tier of counties were somewhat alarming, and we are expecting some loss of grain from the fly, particularly in the northern part of the State, this summer.

GREATER WHEAT-STEM MAGGOT (Meromyza americana Fitch)

Oklahoma

Edward Martin (April 15): At Buffalo, Harper County, this insect is producing spots similar to those produced by greenbugs and was thought for a long time to be Toxoptera work. It is more abundant than in the average year but about the same as last month. Infested spots in fields counted and showed a 1 per cent infestation.

GREENBUG (Toxoptera graminum Rond.)

Ohio

T. H. Parks (May 20): In Pickaway County wheat is badly damaged by Toxoptera in one spot of a field. The spot joined a blue grass fence row from which the aphids evidently came. The blue grass at this place was killed by them. Aphids have spread considerably but are now overcome at this spot by coccinellid larvae. No extended damage to the remainder of the field is expected. The aphids evidently wintered in this blue grass. We have had no zero weather the past winter. No reports of its presence have been received from other localities in the State.

Kansas

J. W. McColloch (April 26): The greenbug is now present in Ellis, Cowley, Sumner, Harper, and Comanche Counties. The infestation is spotted and confined to small areas, but winged forms are present and there has been some spreading. Coccinellid adults and larvae are abundant in most fields.

Oklahoma E. E. Scholl (April 25): I have inspected quite a number of grain fields in the Counties of Pawnee, Payne, Noble, Logan, Garfield, Grant, and Alfalfa. Recent rains have brought out the wheat wonderfully well, and the presence of lady-beetles, especially in the western counties, has greatly reduced the infestations. In the western part of Payne County it developed in our investigations yesterday that occasionally we find fields where the greenbugs are so numerous that a great deal of wheat will be destroyed before the pest will be overcome by the lady-beetles.

WESTERN ARMY CUTWORM (Chorizagrotis auxiliaris Grote)

Nebraska M. H. Swenk (May 28): Shortly after May 16 I learned that a local but heavy flight of the moths of the western army cutworm was taking place in Arthur County.

WHEAT JOINTWORM (Hamolita tritici Fitch)

Missouri A. F. Satterthwait (May 1): Each year a portion of many hillside wheat fields is left unharvested, with Hamolita tritici the dominant insect pest and infestations up to 40 per cent common, occasionally over 80 per cent. Adults were issuing on April 27; the apex of the issuance had not been reached on May 1. The locality of the infestation was at Valley Park.

WIREWORMS (Elateridae)

Missouri A. F. Satterthwait (May 14): Occasional stalks of wheat were found killed by wireworm larvae at Valley Park in several bottom fields, the larvae ranging from about 1/2 to over 1 inch in length. Similar injury by wireworms was observed at Pacific May 7.

Nebraska M. H. Swenk (April 15 - May 15): In addition to losses by false wireworms, there seem to have been some rather serious injuries by a species of true wireworm, apparently a Cryptohypnus or Limonius, in the Platte Valley of western Nebraska. Such reports were first received from Keith County near Ogallala and later from Morrill County near Broadwater and from Scotts Bluff County. These reports were received during the last few days in April and the first two weeks in May, winter wheat being the injured crop in all cases.

DRY-LAND WIREWORM (Ludius noxius Hyslop)

Washington M. C. Lane (April 19): In a trip through Douglas County, especially around Waterville, damage to the winter wheat from this wireworm seems to be somewhat less than usual. This is due largely to the better stands and thriftier growth of the grain, which is in turn due to the dry copper carbonate treatment of fall seed for smut and better cultural methods of the last few years. Wireworms were found easily in the poorer stands, but their damage was not noticeable in the majority of fields, especially where the wheat was covering the ground at this time. It is too early to find damage to spring wheat, of which there is very little being seeded. Wireworm damage to spring sown wheat is entirely dependent on weather conditions. With warm dry spring after seeding the wireworms will not work as readily as if the weather remains cold and damp.



(May 1): Larvae of this species are doing the normal amount of damage to the wheat in the Big Bend Region this spring. Damage by the larvae to spring wheat is normal in all fields, owing to cool damp weather the last two weeks. Loss from wireworms of this species averages at this time 10 to 20 per cent of the total plants that sprouted, and the damage is continuing. There is no difference in damage between fields with wet formaldehyde smut treatment and fields treated with dry copper carbonate, though there is more stand and thriftier wheat in the latter fields dry treated. Damage will continue till the weather warms up and the ground dries out down to the wheat crowns.

Adults of this species have appeared the first week in May for the last three seasons and this year is no exception, a few being found today. The males are the only sex found in flight and these only for a week or two.

This report applies to Lincoln, Adams, and Franklin Counties.

IRRIGATION WIREWORM (Pheletes sp.)

Washington M. C. Lane (April 24 and 25): In a trip through the irrigated valleys adjacent to Ellensburg and Yakima, wireworms of this genus were found doing a little damage to spring grain. Damage was similar in every way to that done by wireworms of the genus Ludius under dry-land conditions. However, this wireworm seems to be more of a truck crop wireworm and feeds the whole season on several crops of this class. It is only found under irrigated conditions and thrives best in wet sour places in this section. Damage to growing tubers of potatoes by the feeding tunnels of this wireworm mounts into the millions of dollars every year in Yakima Valley. So far this is the worst insect enemy the farmers of this fast-growing truck crop section have to deal with.

INFLATED WIREWORM (Ludius inflatus Say)

Washington M. C. Lane (April 24 and 25): In a trip to Kittitas and Yakima Counties this wireworm was found to be doing considerable damage to winter wheat on the high prairies near the timber. Wireworms of this species were collected at both Thorp and Tieton that had been killing the wheat for 10 days past and were still at work, although the ground was becoming warm and dry. Good examples of damage done by spring harrowing of winter wheat were seen in these places. Places skipped in fields by the harrow showed fine stands of wheat, while the most part that was harrowed is thin, and the wireworms are fast finishing what was not hurt by the harrow teeth. Loosening up the ground in the spring gives the wireworms a much better chance of moving from plant to plant in drill rows and keeps them also nearer the surface longer. Some seed injury from the use of formaldehyde for smut was also noted, and this in the past has been blamed wrongly in many cases to wireworms.

FALSE WIREWORMS (Eleodes spp.)

Nebraska M. H. Swenk (April 15 - May 15): During the period covered by this report the Great Plains false wireworm continued to be the most seriously injurious enemy of field crops actively present in the State. The Cheyenne County infestation referred to in my last report continued to be the cause of complaints up to the latter part of April. This infestation extended from around Sidney north to around Curley in that

County. Early in April reports were received of injury in Hitchcock County, near Stratton, and such reports continued until the end of the first week in May. These reports indicated about as serious injury in Hitchcock County as in Cheyenne County. During the latter part of April similar reports were received from southern Deuel County, and adjacent parts of Sedgwick County, Colorado. On one farm near Julesburg it was reported that 100 acres of wheat had been destroyed. It would seem that in several western Nebraska counties this pest was an important minor factor in the heavy abandonment of winter wheat fields that has occurred this spring.

Kansas

J. W. McColloch (May 2): A map taken from the Kansas City Weekly Star on this date is of interest because the area of wheat failure and abandonment corresponds with the area where the false wireworm was so destructive last fall and this spring. Most reports credit this failure entirely to drought, but the fact that no germination occurred following rains indicates that the seed was injured.

Washington

M. C. Lane (May 1): There are five species of *Eleodes* that are found in and around the wheat fields of the Big Bend Region in both larval and adult stages. These are vandykei Blaisd.; nunermacheri, var. verucula Blaisd.; hispidlabris, var. imitabilis Blaisd.; nigrina, var. difformis Blaisd.; and humeralis Lec., named in the order of abundance of larvae found in wheat fields. There probably is no appreciable damage except from the first-named vandykei, and the damage is hard to estimate. The damage is to the seed when first planted, and the larvae are very active in the dust during fall seeding and also in the spring, a great many being killed by harrowing. There is no damage to sprouted wheat as far as can be observed. Adults are more numerous than normal this spring, being busy now in laying their eggs. The new brood of adults will not appear till the first of July.

TIPULID LARVA

Michigan

R. H. Pettit (May 22): Tipulid larvae were reported as almost covering new-plowed land at Elwell on the 18th, and were accompanied by larvae of Bibio (probably albipennis).

CORN

CORN EARWORM (Heliothis obsoleta Fab.)

Ohio

H. A. Gossard (May 11): Observations taken at Chillicothe do not indicate that moths of the corn earworm have yet emerged or become active.

Louisiana

T. E. Holloway and W. E. Haley (May 17): In Orleans Parish large larvae of the corn earworm are in young corn along the lake shore of Little Woods.

EUROPEAN CORN BORER (Pyrausta nubilalis Huebn.)

Massachusetts A. I. Bourne (May 22): A report from Winchester, in Middlesex County, relative to the European corn borer states that it has been found in no greater numbers this spring than was the case last year.

Ohio H. A. Gossard (May 11): As a matter of course we expect some increase in the density of infestation of the European corn borer this season and slow spread of the species.

SMARTWEED BORER (Pyrausta ainsliei Heinr.)

Iowa C. J. Drake (May 10): This spring I have received several caterpillars of the smartweed borer that were found in old corn stalks. The farmers, of course, were very much interested and wondered whether this was the European corn borer.

FALL ARMYWORM (Lachyema frugiperda S. & A.)

Louisiana T. E. Holloway and W. E. Haley (May 3): Half-grown larvae found in young corn plants.

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana T. E. Holloway and W. E. Haley (May 17): In Orleans Parish larvae of all sizes are attacking young corn along the lake shore west of Little Woods. Much damage is done in places.

Texas T. C. Barber (May 19): Cornfields, generally, are becoming infested, and adult emergence holes indicate that adults of the spring brood have emerged. Damage is very slight, as yet, but rapidly increasing. Infestation can also be found in broom-corn fields without much difficulty, and threatens to cause serious damage later in the season, although the first crop will not be much injured.

GRASS-STEM WEEVIL (Sphenophorus sp.)

Oklahoma E. E. Scholl (May 21): An examination of corn-fields in the northern part of Lincoln and the southern part of Payne County, near Goodnight, Okla., showed entire fields of young corn killed by a grass-stem weevil.

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

North Carolina Philip Luginbill (May 17): Mr. Kewley has returned from Willard, N.C., where he has made an inspection of our plantings, and reports the damage by the rootworm to be about the same as in previous years. Strange to say, at Columbia it is decidedly less. The planting made in April, which is usually badly infested with rootworms, is very little injured this year. It would seem that this year rootworm injury is "spotted" so to speak; probably heavier along the coast, as weather extremes are not so marked. I have had considerable difficulty in rearing larvae this season, owing to low temperatures and damp weather. I think, therefore, that young larvae may have fared similarly in the field, and that is why we do not find so much damage to young corn this year, that is, in inland regions.



Louisiana T. E. Holloway (May 3): One or two adults were noticed on young corn plants at New Orleans. Damage is slight.

T. H. Jones (May 15): At Baton Rouge plantings of corn made in the same field on March 10, March 17, April 7, April 21, and April 28 were examined on different dates, when corn of different plantings was of about the same size, to determine the relative amount of damage to corn planted on different dates. All except the planting of April 28 showed some damage by the larvae, especially the plantings of March 10 and April 7.

WHITE GRUBS (Phyllophaga sp.)

Texas F. C. Bishopp (April 24): At Dallas adults of this species have been coming to the lights during the past week in moderate numbers. This is the first activity of adult *Lachnosterna* observed this spring.

WIREWORMS (*Elateridae*)

Missouri L. Haseman (May 1 to 8): The abundance of wireworms on corn is a little greater than in an average year. Infestations are generally distributed over the State. The weather has been cool, rather rainy, with warm spells.

Iowa C. N. Ainslie (May 26): I heard this morning that wireworms are taking the corn near Hawarden, north of Sioux City.

ROUGH-HEADED CORN STALK-BEETLE (Ligyrus gibbosus DeG.)

Mississippi R. W. Harned (May 18): The rough-headed corn stalk-beetle is attracting considerable attention in Mississippi at the present time. Almost every day complaints are received at this office regarding damage to corn by these beetles.

SOUTHERN CORN LEAF-BEETLE (Myochrous denticollis Say)

Kansas J. W. McColloch (May 14): At Hartford the southern corn leaf-beetles are reported seriously injuring the early planting of corn.

SEED-CORN MAGGOT (Hylemyia cilicrura Rond.)

Iowa C. J. Drake (May 25): The seed-corn maggot is doing a considerable amount of damage to a field of corn near Madrid, Boone County. We visited this field last Tuesday and found the maggots present in many hills. This field was planted on May 7, and the cold moist weather has been favorable for the maggots, but unfavorable for the corn. Some of the kernels contain from five to eight maggots each.

ALFALFA AND CLOVER

PEA APHID (Illinoia pisi Kalt.)

Missouri L. Haseman (May 4 and 8): We have just begun to get complaints of this pest, but it looks serious, especially as a cold wave on May 8 has swept over us. Some fields in Jackson and Howard Counties are

almost completely destroyed. Abundance is much worse, compared with an average year. Natural enemies observed are ladybeetles, syrphid flies and Hymenopterous parasites. One sample showed Hymenopterous parasites very abundant.

Kansas J. W. McColloch (April 26): The infestation is general in the Kaw River Valley of Shawnee and Wyandotte Counties. Six hundred acres are reported infested. Many aphids are winged and are spreading to garden peas.

California C. M. Packard (April 30): In Owens Valley there are several thousand acres of alfalfa. An unusually warm winter followed by a cool spring is probably responsible for the outbreak. Coccinellids and syrphids are now very abundant and will probably soon reduce the infestation to comparatively unimportant normal numbers. One-half of the first crop is damaged. (May 26): A letter from the County Horticultural Commissioner says that the aphids have almost disappeared in Inyo County and Owens River Valley. There was a decided reduction of their numbers soon after May 1, and where irrigation has been applied the alfalfa is advancing in fine shape.

CLOVER-LEAF WEEVIL (Hypera punctata Fab.)

Delaware C. O. Houghton (April): Injury by this species appears to be about the same as usual at Newark.

Illinois W. P. Flint (April 20): Larvae of Hypera punctata are still very small.

Missouri A. F. Satterthwait (May 15): Found larvae of all sizes, cocoons, pupa, and new adults on April 25 at Creve Coeur, the larvae cutting foliage badly. On May 9 eggs, larvae (only a chance one diseased), and adults were collected at Valley Park.

Kansas Roger C. Smith (May 3): The clover-leaf weevil was very plentiful in a field north of Kansas City. I found larvae of all sizes and some cocoons. I found 8 larvae and 1 cocoon around one clump, but observed very little injury from their feeding. Elsewhere in the valley the weevil, while present in small numbers, does not appear to be of any great importance.

Ohio H. A. Gossard (May 11): The clover-leaf weevil has been noticed quite abundantly at Chillicothe, but they are already dying from fungous attack.

LESSER CLOVER-LEAF WEEVIL (Phytonomus nigrirostris Fab.)

Illinois W. P. Flint (April 20): Small numbers of the clover bud weevil have migrated to the clover fields, but not all of these insects have left hibernating quarters.

GRASS

GRASSHOPPERS (Acridiidae)

- Texas M. C. Tanquary (May 14): Correspondence indicates the possibility of a heavy outbreak of grasshoppers in Coleman County this spring.
- Montana Stewart Lockwood (May 21): The County Agent of Cascade County reports a heavy outbreak. Probably Melanoplus atlantis and bivittatus.

TWO-STRIPED GRASSHOPPER (Melanoplus bivittatus Say)

- Montana Stewart Lockwood (May 17): Numerous young grasshoppers are now hatching in sod land and alfalfa fields, with many more to come. In some places 40 pods of eggs to the square foot are found.

WHITE GRUBS (Phyllophaga spp.)

- Iowa C. N. Ainslie (May 17): Half-grown larvae of Lachnosterna are very plentiful in top soil at Sioux City. Adults of Lachnosterna implicita Horn are taken in large numbers after the plow and in gardens at Sioux City. Lachnosterna rugosa Walsh. is present but not so numerous as L. implicita.
- New York Roy Latham (May 1): The first date of swarming is May 1 at Orient, with the weather cool and dry. Abundance is normal as compared with an average year.
- L. J. Jones (May 1): Adults are not yet numerous at Bainbridge. They are not as numerous as previously. The weather is cold and wet.

BILLBUGS (Sphenophorus spp.)

- Missouri A. F. Satterthwait and assistants (May 14): Billbug eggs, of at least two species, were found as follows: May 7, Pacific, Franklin County; May 9, Valley Park, St. Louis County; May 14, Webster Groves. (May 15): April 25 a heavy billbug infestation in an old timothy meadow at Creve Coeur showed 94 per cent Sphenophorus destructor Chitt., 3 per cent parvulus Gyll., 2 per cent zeae Walsh., and 1 per cent venatus Say, all adults, the total specimens taken being 107.

F R U I T I N S E C T S

APPLE

GREEN APPLE APHID (Aphis pomi DeG.)

- Massachusetts A. I. Bourne (May 22): Northeastern Essex County reports indicate that the green apple aphid is not very abundant and is not causing any serious alarm; in Middlesex County it is present in normal abundance; Worcester County reports state that it is fairly abundant, and slightly worse than last year. In the southern half of the county very few aphids have been found, particularly in the well-cared-for

orchards. In Bristol County and the Cape region they have been reported as being present in about average numbers, no worse at any rate than in normal years. In northern Plymouth County a report from Brockton states that hardly any have been found in orchards.

In the counties in the Connecticut Valley they have been found to be quite plentiful on the opening buds, but no worse than last year, and not abundant enough to cause any serious worry. Here at the college, although examination of the trees in the dormant season indicated a large number of eggs, the hatch was very small indeed, and the lice are present in unusually small numbers throughout all the blocks of apples in the orchards. Not enough lice are present, in fact, to warrant a call for Black-Leaf 40 in the early spring spray.

New York

P. J. Parrott (April 23): The first nymphs of Aphis pomi were found on this date at Geneva.

C. R. Crosby and assistants: This aphid is found present but not abundant in Monroe, Chautauqua, Onondaga, Genesee, Orleans, and Suffolk Counties.

Georgia

Oliver I. Snapp (May 1): The apple leaf-aphid is unusually abundant on the apple in this locality this season.

APPLE GRAIN APHID (Rhopalosiphum prunifoliae Fitch)

New York

C. R. Crosby and assistants: The grain aphids began hatching the latter part of April; they are reported as very abundant throughout Ontario and Columbia Counties, also recorded from Onondaga, Oswego, Genesee, and Westchester Counties.

Alabama

Neale F. Howard (April 11): This aphid is very abundant on rye on the Bureau's experimental plots here. Hippodamia convergens Guer. is very abundant and Megilla maculata DeG. is quite numerous, eggs of the latter being quite common. This rye is being plowed under for a cover crop and the infestation has not been present long enough to have caused any injury. No loss has occurred on this field.

ROSY APPLE APHID (Anuraphis roseus Baker)

New York

C. R. Crosby and assistants: This species is only present in limited numbers throughout the apple-growing sections of the State.

Indiana

J. J. Davis (May 22): The rosy apple aphid is doing some damage in sections of southern Indiana. They are doing damage in several orchards and one in particular at Clayton, Ind., which was examined May 19. Several trees in this orchard were sprayed with 2 per cent lubricating oil emulsion as the buds were opening up and after the aphids had hatched. The owner advises that the young aphids were killed but that many of the older individuals survived the treatment. This same orchardist sprayed apple trees at different stages of development from the time the buds were beginning to open up until the leaves were the size of a squirrel's ear or larger. At no time did he get injury from the properly prepared oil emulsion.

B. A. Porter (May 23): A rather severe infestation is developing in the vicinity of Vincennes. A few winged migrants are appearing.

Arkansas A. J. Ackerman (May 14): This is the first season that this species has been found in any number of orchards of northwestern Arkansas. Little damage is expected, as an abundance of predaceous ladybird larvae have been noted wherever infestations occur.

CODLING MOTH (Carpocarsa pomonella L.)

New York C. R. Crosby and assistants: The codling moth began pupating early in May. No unusual outbreaks have been reported so far from the fruit-growing sections of New York.

Virginia L. A. Stearns and assistant: Pupation of overwintered larvae was commencing in Leesburg, northern Piedmont, April 8, and in Winchester, northern Valley, April 9.

Indiana H. F. Dietz (May 19): The first moths emerged at Indianapolis on May 14. On this date all the bloom of varieties of apple like Yellow Transparent and Wealthy was off and the calyx lobes were beginning to close.

J. J. Davis (May 22): The codling moths, adults, have not yet issued at La Fayette according to our observations.

Missouri Leonard Haseman (May 22): Adults from the overwintering worms began emerging a little late, though they have been out now for about 10 days. The late spring also held back the fruit bloom. No eggs or worms have been taken in central Missouri at this date.

Arkansas and Kansas A. J. Ackerman (May 14): The first moths emerged in jars at the Bentonville, Ark., Laboratory, on May 1. At Wichita, Kans., the first moths were taken from jars on May 7.

RASCAL LEAF-CRUMPLER (Mineola indiginella Zell.)

Nebraska M. H. Swenk (May 15): Late in April a small apple orchard in Dundy County was reported heavily infested with the cases of the leaf-crumpler, Mineola indiginella. The partly grown caterpillars were already active by May 1.

RIBBED COCOON MAKER (Bucculatrix nomifoliella Clem.)

New York C. R. Crosby and assistants: This species is quite general over the fruit-growing sections of the States especially in poorly cared for orchards. It is very heavily parasitized; in one case nine-tenths of the cocoons had exit holes of parasites.

FRUIT-TREE LEAF-ROLLER (Cacoecia argyrospila Walk.)

New York C. R. Crosby and assistants: This insect is found moderately abundant throughout Dutchess, Genesee, Ontario, Orleans and Ulster Counties. Eggs began hatching about the middle of the month.

Ira M. Hawley (May 14): This insect is spreading in counties where it has been introduced, and egg masses are much more abundant than in former years.

H. J. Pack (May 18): An unusual infestation appears likely in Cache County this year. Egg masses are very numerous, and hatching has been going on for the past few days.

APPLE AND THORN SKFLETONIZER (Hemerophila nariana Clerck)

Connecticut P. Garman (April 26): Numbers of adults were observed about apple trees in New Haven and north Branford on the 20th and 26th.

York P. D. Rupert (May 26): Young larvae are starting to skeletonize at Upper Red Hook.

Henry Bird (May 17): This insect has not been observed as yet at Rye, and since the last fall brood of adults was very much smaller than was the case in 1921, the chances are that there may not be much of an outbreak during the coming season.

BUD MOTH (Tmetocera ocellana D. & S.)

Massachusetts A. I. Bourne (May 22): The bud moth seems to be occurring more or less abundantly in some sections of the State. A report has been received from the County Agent of Bristol County, stating that they are finding them in some abundance. Here at Amherst they also appear to be more abundant than last year, though not in numbers enough to cause serious damage.

York C. R. Crosby and assistants: This insect is reported as moderately abundant throughout the western part of the State. A single case of serious infestation has been reported from Wayne County, where from 5 to 25 per cent of the buds were destroyed where the delayed-dormant spray was not applied or was applied too late.

APPLE TENT CATERPILLAR (Malacosoma americana Fab.)

Hampshire P. R. Lowry (May 18): This insect is much more numerous than last year in several places, and I have noticed rather severe defoliation to apple.

Massachusetts A. I. Bourne (May 22): This insect began hatching in the region about Amherst April 20, and was reported as hatching somewhat earlier in the eastern part of the State. It is reported as being exceedingly prevalent this year, reports having been received from Essex, Middlesex, Worcester, Bristol, and Plymouth Counties. One report from the town of Harford in Worcester County estimates an increase over last year of from 50 to 60 per cent. This insect is decidedly on the increase in all sections of the State and bears out predictions made from the abundance of egg masses early in the season. Delayed-dormant spray seems to have controlled this pest.



- Connecticut M. P. Zappe (May 8): This insect has been observed as much more abundant than last year at many places throughout the State.
- New York M. D. Leonard (May 12): Tents of this insect are common on wild cherry trees in Albany County.
- C. R. Crosby and assistants: This insect is generally more abundant than it was last year in the Hudson River Valley. It is reported as at least half again as numerous in the western part of the State. It has been controlled by delayed-dormant spray.
- New Jersey H. B. Weiss (May 5): The apple tent caterpillar is more abundant than usual over the northern third of the State.
- M. D. Leonard (May 22): This insect has been observed as very common at Glenrock and Ridgewood.
- Pennsylvania T. L. Guyton (May 9): The species is reported as very common all the way from Harrisburg to Philadelphia.
- Delaware C. O. Houghton (April 25): Nests are now very numerous, more so than at any time during recent years. Eggs were hatching April 5, just about a week later than last year.
- Maryland E. N. Cory (May 6): The apple tree tent caterpillars have defoliated most of the roadside cherry trees. They are much more abundant than heretofore in Prince Georges, Baltimore, Anne Arundel, Harford, and Montgomery Counties.
- Virginia L. A. Stearns (May 9): Nests of this insect are conspicuously abundant on wild cherries and on apples in Fairfax County.

FALL WEBWORM (Hypocntria cunea Drury)

- Georgia O. I. Snapp (May 8): The first-brood moths are now emerging in the insectary. The larvae of these moths were taken from a nest on a peach tree last fall. Usually the attack on peach foliage is made by the fall brood of larvae, after the fruit has been harvested. The larvae captured last fall were heavily parasitized by a dipterous parasite.

SPRING CANKERWORM (Paleacrita vernata Peck)

- New York C. R. Crosby and assistants: This insect is reported as more or less serious in Dutchess and Genesee Counties.
- Illinois W. P. Flint (April 20): Adults of the spring cankerworms have been observed on the wing during the month.
- Iowa C. N. Ainslie (May 22): Adults are numerous about the light, the flight being later than usual.
- Ohio H. A. Gossard (May 11): On March 28 we received a spring cankerworm moth from Ravenna.



FALL CANKERWORM (Alsophila nemetaria Harr.)

- Connecticut M. P. Zappe (May 8): Larvae have just hatched at New Haven and Milford.
- New York G. E. Smith (April 28): A few egg masses of this insect were found south of Medina and south of Orleans County.
- Ohio H. A. Gossard (May 11): Eggs of this insect were received from Hinkley.

FALSE APPLE RED-BUG (Lygidea mendax Reut.)

- Massachusetts A. I. Bourne (May 22): These insects began their characteristic scarring about the 7th of May at Amherst. This insect is evidently somewhat less abundant than last year, very few being reported from other sections of the State. At Amherst there seems to be a considerable increase over last year.
- New York C. R. Crosby and assistants: This insect is reported as being quite general throughout Dutchess County, where there are many bad infestations. It is also reported though in smaller numbers from Columbia, Rockland, and Ulster Counties.
- Maryland E. N. Cory (May 11): Slight damage to tender tips on check trees in experiment plats has been noted at Whiteford, Va.
- Virginia W. J. Schoene (May 23): There is more red-bug injury in the Winchester region than has been noted in previous years. The insect has not yet become a major pest in this section, however.

APPLE LEAFHOPPERS (Several species)

- Massachusetts A. I. Bourne (May 22): The apple leafhoppers began to appear in the college orchard at Amherst about the 8th of May. Present indications are that this pest will appear in greater numbers than for several years past.
- Connecticut M. P. Zappe (May 8): Young nymphs are just hatching at Milford.
- New York C. R. Crosby and assistants: These insects are reported as being very abundant throughout Orleans County. They are also reported, though not a serious pest, in Wyoming, Dutchess, and Ulster Counties.
- Virginia L. A. Stearns (April 22): The numbers of this insect have been rapidly on the increase during the past few years in Fairfax and Loudoun Counties, northern Piedmont. This species (Erythroneura hartii Gill.) is the most important leafhopper on apple in this section and probably the most serious of the minor apple pests.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

- New York C. R. Crosby and assistants: This insect has been reported as quite generally abundant throughout the apple-growing sections of New York State. The pest is becoming more abundant and serious in Orleans County, and in places in Oswego, Wayne, and Wyoming Counties.

- io H. A. Gossard (May 11): This pest is being reported from several parts of the State.
- linois W. P. Flint (May 18): An unusually high percentage of scale have survived the winter in southern Illinois. Examinations of unsprayed apple and peach trees made from May 1 to the 5th, shows from 70 to 76 per cent of the scale alive. Results of spraying with the lubricating oil emulsion have been excellent. This material has been generally used by orchardists in the southern and western fruit districts.
- ssouri Leonard Haseman (May 22): Good results on control have been secured with lubricating-oil emulsion. Experiments with different strengths make it seem likely that this emulsion has a great future. Male scales in central Missouri began emerging between May 10 and May 15.

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

- w York C. R. Crosby and assistants: This insect has been reported as being quite generally abundant over the fruit growing sections of the State, becoming very abundant in many apple orchards.
- diana H. F. Dietz (May 19): Hatching of eggs of the light-brown form of this insect began on May 18, which is 18 days later than last year. This is a two-brooded form. No hatching of the gray-brown form, which is single-brooded, has been observed about Indianapolis.
- braska M. H. Swenk (May 15): Several reports of injury by the oyster-shell scale have been received during the period covered by this report.

EUROPEAN RED SPIDER (Paratetranychus pilosus C. & F.)

- ssachusetts A. I. Bourne (May 22): European red mites were found about the first week in May at Amherst and are now quite prevalent throughout all of the blocks of apples, particularly on Baldwins, although they are not as abundant as has been the case during the last two or three seasons. One report has been received from outside the Connecticut Valley. This is from Harvard in Worcester County, where they are reported as quite numerous and quite generally spread throughout the orchard, where they were found on tender opening leaves.
- w York C. R. Crosby and assistants: This insect has been reported as more or less numerous in Rockland, Orange, Orleans, Ulster and Dutchess Counties.
- io H. A. Gossard (May 11): Eggs of the European red spider were received on May 10 from a suburb of Cleveland.

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

- ssachusetts A. I. Bourne (May 22): During the first week in May pears at Amherst were found to be infested and egg laying was under way. Eggs were so numerous that in many cases on a single fruit spur 50 to 60 eggs could be counted. This is the most serious infestation that we have had for several years. Very few inquiries have been received from other parts of the State, so the outbreak is probably local.

New York C. R. Crosby and assistants: Pear psylla eggs were hatching throughout the western part of the State from the middle to the latter part of May. The pest is generally abundant throughout the fruit section, about 50 per cent of the orchards being seriously infested in Genesee County. In the southern part of the State it is quite general, but not serious.

PEAR-LEAF BLISTER-MITE (Eriophyes pyri Pgst.)

Massachusetts A. I. Bourne (May 22): Work of the blister-mite is just beginning to show up at Amherst, especially on trees which did not receive the application of lime-sulphur.

Connecticut W. E. Britton (May 14): Galls are beginning to show up on unfolding leaves at Hampden.

New York C. C. Wagoner (May 18): This insect has been observed in several cases in Ulster County, but is not serious.

P. D. Rupert (May 18): This insect is very scarce in Dutchess County.

PEAR MIDGE (Contarinia pyrivora Riley)

New York C. C. Wagoner (May 18): Two orchards in Ulster County have been found to have 30 per cent infestation.

PEACH

PEACH BORER (Aegeria exitiosa Say)

New York C. R. Crosby and assistants: This pest is recorded as quite severe over most of the State, particularly in poorly cared-for orchards.

Georgia Oliver I. Snapp (May 15): No injury to either the cambium or the bark layer of three, four, or five year old peach trees has shown up to date from the use of the three-fourths ounce dose exposed for a period of 28 days. The peach borer is about as prevalent as normally in Central Georgia. Excellent results are reported from the use of paradichlorobenzene in commercial peach orchards last fall.

PEACH TWIG-BORER (Anarsia lineatella Zell.)

Indiana J. J. Davis (May 22): Peach twigs showing typical injury by the twig-borer were received from Seymour, Ind., on May 5. The orchardist reports considerable damage on some trees and that it is a repetition of the injury which occurred a year ago.

Utah Ira M. Hawley (May 14): This pest is just showing up in the orchards. Infested twigs are numerous in unsprayed orchards.

A WEEVIL (Conotrachelus anaglypticus Say)

Georgia Oliver I. Snapp (May 14): Three adults were captured from frames while jarring for C. nenuphar Herbst. on the morning of May 7 and one on May 14. The peach is the host for C. anaglypticus in this latitude, and this species is responsible for a small percentage of the wormy peaches in Georgia.

FLOWER THRIPS (Euthrips tritici Fitch)

diana B. A. Porter (May 24): Nearly 10 per cent of the small peaches in the vicinity of Vincennes have been already injured by the peach thrips. (May 25): The thrips appeared early in May as the petals were falling, and within a few days had caused serious injury to the newly set fruit.

C. E. Barker (May 24): Injury to young peaches, identical with the injury by thrips in other localities, has been found at Mitchell, Ind. Estimate: 3 to 5 per cent of fruit in 30-acre peach orchard as damaged in this way.

GREEN PEACH APHID (Myzus persicae Sulz.)

v Mexico W. E. Emery (May 7): This aphid has done considerable damage to foliage, but is being sprayed for and put under control in Dona Ana County.

LESSER PEACH-TREE BORER (Aegeria pictipes G. & R.)

v York C. R. Crosby and assistants: This borer has been observed on sweet cherry in small numbers in Wayne County; is common and severe in some orchards in Monroe County, and rather abundant where brown rot cankers are bad in Orleans County, Lake section.

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

v York C. R. Crosby and assistants: Many weakened trees are infested at Sodus, Wayne County. The shot-hole borer is plentiful in old peach-wood piles and also in peach orchards around Holley, Orleans County; present in Monroe County; abundant in orchards where peach borers are bad and in stone fruits near brush and wood piles in Orleans County; found locally on peach in Wayne County, where it has killed several black cherry trees.

Georgia Oliver I. Snapp (May 1): Trees are badly infested in several old neglected peach orchards. Twigs of healthy peach trees are sometimes attacked by adults later in the season, as reported in the Insect Pest Survey Bulletin of November, 1922.



PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

orgia O. I. Snapp (April 30): The first curculio larvae of the 1923 season reached maturity, left the peach, and entered the soil on this date. On April 18, the first curculio eggs hatched in the insectary. On April 18, a number of larvae varying in age from 3 to 5 days were found in peaches on trees in commercial orchards near Fort Valley.

(May 15): The largest number of eggs deposited to May 13 by any female is 147. The largest number deposited in a single day to date by one female is 14. The average number of eggs deposited during the season to date by females of the first 1922 generation is 61.2 per cent. The average number deposited by second-generation females is 61.2 per cent. The incubation period for C. nenuphar eggs during the past month has varied from 4 to 11 days on account of variable temperatures. An increased infestation in peach "drops" is noted in orchards where the first curculio spray was omitted. Two and one-half bushels of "drops" from one of these orchards have given to date 8,223 matured larvae. Two and one-half bushels of "drops" from an experimental orchard have given to date 4,438 matured larvae as compared with 2,752 from the same amount of "drops" from this orchard a year ago. The general curculio infestation in central Georgia at the present time appears to be heavier than in 1922, but lighter than in 1921.

CHERRY

CHERRY APHID (Myzus cerasi Fab.)

W York C. R. Crosby and assistants: Found abundantly in inside of Rosette trees, in Ulster County; found in a few orchards around Geneva, in Ontario County.

ryland J. A. Hyslop (May 20): All terminal leaves curled, twigs and leaves black with aphids at Avenel. Much more abundant compared with last month and average year.

PLUM

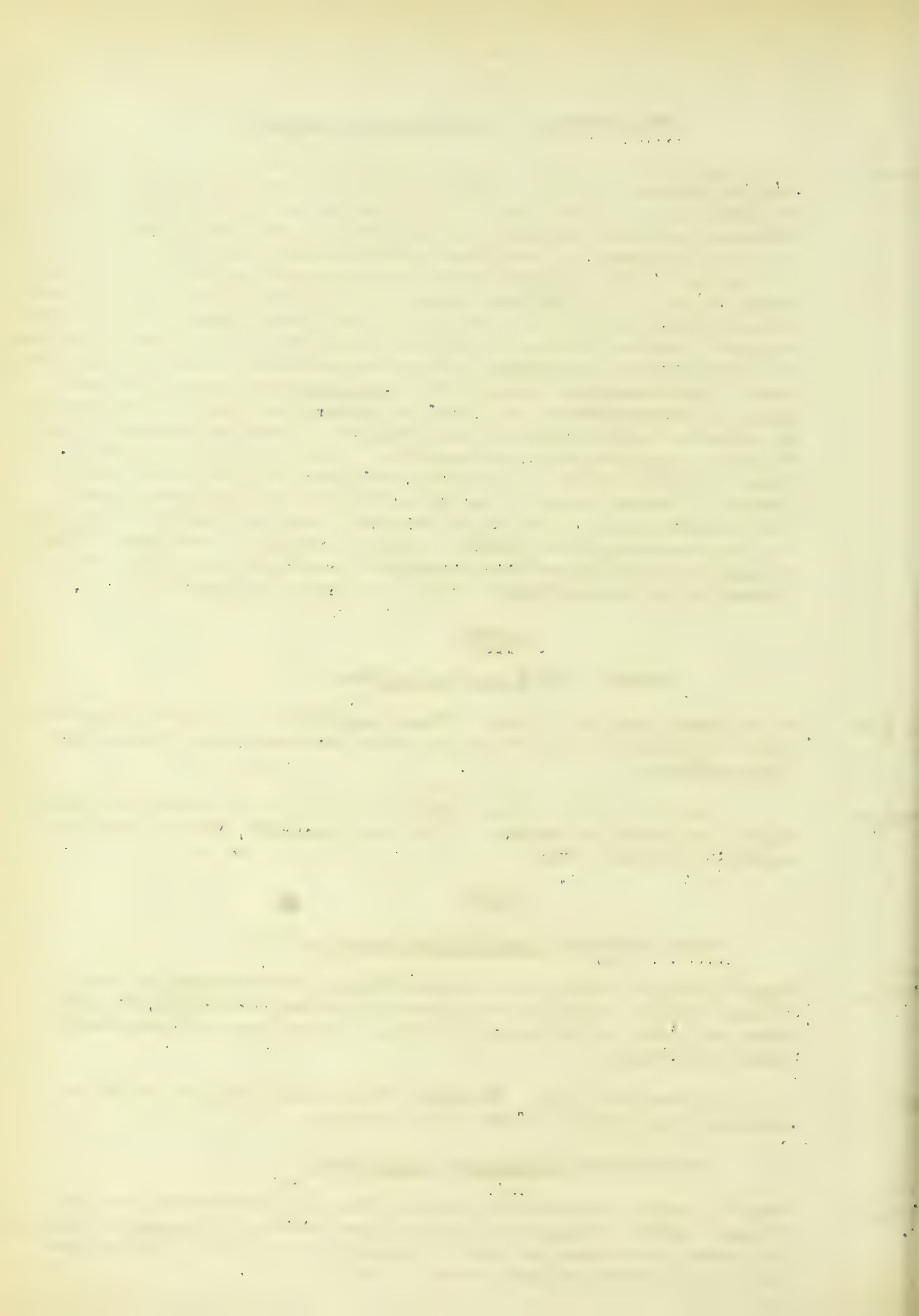
PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

st
rginia Fred E. Brooks, Monthly News Letter Bureau of Entomology, No. 108, (April, 1923): Failure to collect plum curculios in jarring plum trees on April 14 indicates that these species have not yet emerged from hibernation.

io H. A. Gossard (May 11): On March 30 the plum curculio beetle was received from Bowling Green taken from plum.

PLUM GOUGER (Anthonomus scutellaris Lec.)

st
rginia Fred E. Brooks, Monthly News Letter, Bureau of Entomology, No. 108 (April, 1923): Failure to collect plum gougers, Anthonomus scutellaris in jarring plum trees on April 14 indicates that these species have not yet emerged from hibernation.



A KATYDID (Microcentrum rhombifolium Sauss.)

H. A. Gossard (May 11): On March 20 eggs of this species from Greenville were received on plum cuttings.

EUROPEAN FRUIT LECANIUM (Lecanium corni Bouche')

York C. R. Crosby and assistants: This insect is plentiful in a few orchards near Medina and Knowlesville, and generally scattered in Orleans County, but not serious in Ontario County.

RASPBERRY

RASPBERRY CANE-BORER (Oberea bimaculata Oliv.)

York C. R. Crosby and assistants: Considerable damage to raspberry has been reported in Ulster County. In one patch 30 to 40 per cent were reported damaged.

ROSE SCALE (Aulacaspis rosae Bouche')

York C. R. Crosby and assistants: One infestation in central northern part of Dutchess County is reported.

RASPBERRY FRUITWORM (Pyturus unicolor Say)

York C. R. Crosby and assistants: Abundant only in one location, few but general in Ulster County.

RASPBERRY SAWFLY (Monophadnoides rubi Harr.)

York C. R. Crosby and assistants: The first larvae were observed on May 11 in Chautauqua County.

BLACKBERRY

A KATYDID (Microcentrum rhombifolium Sauss.)

H. A. Gossard (May 11): On January 29 we received eggs of the angular-winged katydid from Springfield on blackberry canes.

BLOSSOM ANOMALA (Anomala undulata Welsh.)

Michigan R. H. Pettit (May 23): We received today specimens of Anomala undulata from Coldwater, Mich., from a farmer who reports that a swarm came out and clustered in large bunches, just like bees. He says the air was filled with them, covering an area of five or six acres, and that they fed voraciously on the foliage of elm, and also on several blackberry bushes. He reports that after this sudden uprising they failed to appear next day and that nothing more has been seen of them.

GRAPE

GRAPE LEAFHOPPER (Typhlocyba comes Say)

York C. R. Crosby and assistants: Infestation continues much below the conditions of last year at Fredonia, Chautauqua County; where this insect was found feeding on the above plants during the past week. Apparently it is far less abundant than last spring though very abundant in some vineyards. They are not yet feeding, and the way I detected them was by following behind a man who was pulling brush out of the vineyard, when they arose in swarms. The species is rather abundant in Ulster County. Adults are feeding on raspberry foliage but are not numerous in Chautauqua County. The insects appeared in good numbers and are now changing from their darker orange color to yellow, in Chautauqua County.

Mexico W. E. Emery (May 7): This insect is more numerous than last year, but no damage has been done so far; foliage is not very far advanced.

GRAPE LEAF-ROLLER (Desmia funeralis Huebn.)

o R. S. McKay (May 19): Work of larvae was first noticeable about May 10. I estimate 10 to 25 per cent infestation.

A WEEVIL (Rhigopsis effracta Lec.)

ifornia W. D. Pierce (May 31): Specimens were sent in by Harry Smith with the report that they were damaging the tender growth of grape vines. So far as I know this is the first charge against this species, which has formerly been reported as from yucca. The specimens are from San Bernardino County. They are probably root weevils.

GRAPE FLEA BEETLE (Haltica chalybea Ill.)

York C. R. Crosby and assistant: No infestation of this insect has been observed or reported. The buds are now swollen to such an extent as to be practically past danger of destruction by this pest at Fredonia in Chautauqua County.

STRIPED TREE CRICKET (Oecanthus nigricornis Walk.)

o H. A. Gossard (May 11): On March 5 we received from Geneva, Ohio, eggs of the tree cricket on grape tips.

CURRENT

CURRENT APHID (Myzus ribis L.)

York C. R. Crosby and assistants: Currant aphids are very few and local as yet in Ulster County, but found generally on opening leaves in Genesee County.

P. J. Parrott (May 5): Found beginning to curl currant foliage at Geneva. (April 19): First newly hatched nymphs observed.



- Delaware C. O. Houghton (April): This aphid is reported attacking currant at Newark, about the same as in an average year.
- Iowa Fred D. Butcher (May 15): Old adults are just giving birth to young. They average 8 to 15 young on each leaf attacked, and about one-fourth of the leaves on each plant have lice present.

IMPORTED CURRANTWORM (Pteronidea ribesi Scop.)

- New York C. R. Crosby and assistants: Larvae first appeared in Nassau County. Infestation is general, but eggs are numerous only in local spots. Worms are hatching. No serious injury is expected in sprayed plantings. Considerable damage is being done to currant bushes by the imported currantworm.
- Delaware C. O. Houghton (April 23): This species is appearing in smaller numbers here this spring.
- Kansas G. A. Dean (May 22): Within the last two or three days several reports have reached me of the currantworm doing considerable damage to currants in Riley County.
- Nebraska M. H. Swenk (May 15): The imported currantworm was first observed doing damage to gooseberry bushes this spring on May 15.

PECAN

AMBROSIA BEETLES

- Mississippi R. W. Harned (May 18): During the last few weeks we have received at this office quite a number of complaints in regard to ambrosia beetles on pecan trees. This is the first time since 1917 that we have received many complaints in regard to these insects.

PECAN-NUT CASE-BEARER (Acrobasis hebescella Hulst.)

- Georgia and Florida J. B. Gill (May 28): Injury to pecan nuts by first-brood larvae of this insect is reported from DeFitt, Ga., Beconton, Ga., and Thomasville, Ga., but so far the extent of damage is light. Present indications point to a very mild infestation of this insect during this season, while many orchards throughout South Georgia and North Florida have set large crops. No damage has yet been reported by growers from Monticello, Fla., in which section the pecan-nut case-bearer has been more or less destructive to nut crops during the past ten years. Two effective parasites, namely Exorista pyste Walk. and Habrobracon variabilis Cush., have been reared in numbers from the overwintered larvae which attack the tender shoots of pecan early in spring before the nuts have set. It is generally believed that these two parasites are important factors in the natural control of this pest.

PECAN CASE-BEARER (Acrobasis nebullella Riley)

Georgia and
Florida

J.

J. B. Gill (May 28): During the early spring some unsprayed pecan orchards in North Florida and South Georgia were rather severely damaged by the ravages of the larvae of the pecan leaf case-bearer. It should be stated, however, that the damage is not so serious and extensive this year as it has been in some previous seasons. In orchards sprayed last August and the early part of September there is no appreciable injury to the buds and foliage, and according to our observations and the reports from practical pecan growers this insect has been controlled very satisfactorily. We have perfected quite an effective control on this first-class pest and it is gratifying to note that growers generally are well pleased with results obtained in carrying out our spraying recommendations.

PECAN BUD-MOTH (Proteonteryx bolliana Sling.)

Florida

J. B. Gill (May 28): The larvae of the pecan bud-moth have been reported by nurserymen from Monticello, Fla., as doing serious damage to pecan nursery stock during the present season. This species also infests bearing pecan trees but the injury caused is not of a serious nature. It is quite a serious pest on young orchard pecan trees and pecan nursery stock, however, because the larvae largely confine their attacks to the terminal buds and prevent the trees from making a satisfactory growth. According to some pecan nurserymen, the injury is much worse during a wet spring.

FALL WEBWORM (Hyphantria cunea Drury)

Georgia

J. B. Gill (May 28): At this time the fall webworm is occurring in injurious numbers on pecan trees in this section, and no doubt the second brood will be quite large, causing very serious damage during the summer months. The webs are also seen abundantly on trees other than the pecan, especially wild persimmon and black walnut.

PECAN CIGAR CASE-BEARER (Coleophora carvaefoliella Clem.)

Georgia and
Florida

J. B. Gill (May 28): The pecan cigar case-bearer has occurred in somewhat injurious numbers in pecan orchards around Baldwin, Fla. A light infestation of this insect is also reported from pecan orchards in the Albany, Ga., section.

FIG

THREE-LINED FIG BORER (Ptychodes vittata Fab.)

Louisiana

T. H. Jones (May 15): Mr. Felix Bachemin, Jr., Agricultural Agent for the New Orleans Great Northern Railroad Company, wrote concerning a heavy infestation of borers doing considerable damage to fig trees at several points along the line. Injury is probably due to this species.

ORANGE

PURPLE SCALE (Lenidosaphes beckii Newm.)

Louisiana T. H. Jones (May 15): Infested material was received from Amite on April 10 and from Lake Charles on April 20.

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Louisiana T. H. Jones (May 15): Infested orange leaves were received from Lake Charles on April 20, and infested leaves of Cape Jasmine from Alexandria on April 6.

CITRUS THRIPS (Scirtothrips citri Moulton)

California California Weekly News Letter Vol. 5, No. 11: All available spraying equipment is now in operation in the citrus groves in Tulare County for the control of citrus thrips and citricola scale. The latter are now hatching in large numbers and a season of generally severe infestations is indicated.

COFFEE

THE HORMIGUILLA (Myrmelachista ambigua ramulorum Wh.)

Porto Rico R. E. Danforth (May 19): The "hormiguilla", Myrmelachista ambigua ramulorum Wh., considered the worst insect enemy of coffee in Porto Rico, is very abundant in the coffee plantations of this region. It is a small ant, about one-twelfth inch long, with light brown thorax and legs, and shiny black head and abdomen. It makes tunnels both in coffee trees and coffee shade-trees, being here particularly fond of the "guama", Inga laurina, although it attacks trees of several distinct families... It attends a pink mealy bug, Cryptostigma ingae Ferris, in its tunnels in the living coffee twigs. In the same green twig I have found all stages of the mealy bug and larvae and pupae of the ant, in different chambers not far apart. The principal chambers are at the joints, just below the smallest or fruit-bearing laterals. They also tunnel in dead wood, both high and low, in which they also rear their young.

GUAVA

GUAVA LEAFROLLER (Attelabus sexmaculatus Chev.)

Porto Rico R. E. Danforth (May 19): The attelabid beetles, Attelabus sexmaculatus Chev., or guava leaf-roller, is not only abundant on guava but is also conspicuously mutilating the leaves of one of the commonest roadside shade trees here, the "almendro", Terminalia catappa L.

TRUCK - CROP INSECTS

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

- New York Roy Latham (May 5): A few potato beetles are out at the present time at Orient, Suffolk County. Early potatoes are just appearing through the ground. (May 19): Many young plants just above the ground are badly eaten. The beetles are much more abundant than in an average year. The weather is cool and dry. No natural enemies have been observed.
- Maryland J. A. Hyslop (May 14): At Anabel potatoes are just appearing above ground. The first adult of the season was found today.
- Missouri L. Haseman (May 22): Thus far this beetle has not shown up in central Missouri. Scattered migratory specimens were observed as early as May 12, but no complaints have yet been made of beetles on potatoes.
- Texas F. C. Bishopp (May 23): At Dallas, Colorado potato beetles have been present in destructive numbers in many potato patches in this vicinity. The second brood of adults is emerging in numbers and will probably defoliate late potatoes if not poisoned. In some instances late-set tomato plants were destroyed by the bugs. This injury was worst when the tomatoes were planted near potatoes or weeds.

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

- New York G. E. Smith (May 18): This insect is abundant in gardens in Orleans County.
- H. C. Hockett (May 18): This insect is found abundantly in the woods in Suffolk County.
- Roy Latham (May 19): At Orient, some plants 2 to 3 inches high are killed in sheltering woods. This insect is more abundant than in an average year and much more than last month. The weather is cool and dry. No enemies have been observed.

A FLEA-BEETLE (Disomycha sp. n.)

- Porto Rico R. E. Danforth (May 19): The new green flea-beetles with orange prothorax, Disomycha sp. n., common on beets and chard, is also attacking white potatoes and turnip leaves.

IMBRICATED SNOUT-BEETLE (Epicaerus imbricatus Say)

- Mississippi R. W. Harned (May 18): Several complaints have been received at this office with regard to the imbricated snout-beetle damaging tomato plants in the southern part of the State.



YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli Guen.)

Mississippi

R. W. Harned (May 18): We have received complaints regarding the yellow-striped armyworm from two places in the State. From Lucedale we have received specimens of this insect damaging tomato plants. From Seminary we have received specimens taken from cotton.

CUTWORMS (Noctuidae)

Kansas

D. C. Parman (May 19): Severe losses, 75 per cent, have occurred in all gardens in the district of Uvalde caused by several species of cutworms, and most gardens are practically bare or have very straggling stands. The tomato crops to the south have suffered severely, but not so much as the general gardens, on account of better control measures employed.

F. C. Bishopp (May 23): Cutworms of several species have caused considerable damage in truck gardens in the vicinity of Dallas during the past month of six weeks.

SWEET POTATO

TWO-STRIPED SWEET POTATO BEETLE (Cassida bivittata Say)

Mississippi

M. R. Smith (May 10): Adults of this species of beetles are very abundant on plants recently set out in a field belonging to the A. & M. College. As many as six or eight specimens were found on some of the small plants, which were badly riddled as a result.

SWEET POTATO WEEVIL (Cylas formicarius Fab.)

Oklahoma

E. E. Scholl (May 21): It has been reported to this office by the State Board of Agriculture that Cylas formicarius Fab. has been found in sweet potato fields in the counties of Jefferson and Stephens of this State. A further investigation will be made by entomologists of this Department and of the State Board next week.

MOTTLED TORTOISE BEETLE (Chirida guttata Oliv.)

Mississippi

M. R. Smith (May 10): Adults of this species of beetles are very abundant on plants recently set out in a field belonging to the A. & M. College. As many as six or eight specimens were found on some of the small plants, which were badly riddled as a result.

GOLDEN TORTOISE BEETLE (Metritona bicolor Fab.)

Mississippi

M. R. Smith (May 10): Adults of this species of beetles are very abundant on plants recently set out in a field belonging to the A. & M. College. As many as six or eight specimens were found on some of the small plants, which were badly riddled as a result.



CABBAGE

CABBAGE WORM (Pontia rapae L.)

- New York Roy Latham (May 5): Cabbage butterflies have been flying at Orient, Suffolk County, since April 9, but are not common.
- Henry Dietrich (May 35): A pair of cabbage butterflies were noticed at Appleton on May 17 for the first time this season.
- W. D. Mills (May 14): First adults were seen in Nassau County on this date.
- Delaware C. O. Houghton (April): A moderate number of this species have been observed on the wing at Newark, first appearing April 6. It is less abundant than in an average year.
- Virginia Herbert Spencer (May 9): To date the cabbage crop has had no insect outbreaks of importance, and it is doubtful if any will occur this spring, since the crop is practically made. It is rather unusual not to have reports of imported cabbage worms, but none have come to the attention of this station.

CABBAGE MAGGOT (Phorbia brassicae Bouche)

- New York C. R. Crosby and assistants: Flies were observed May 4 in moderate numbers both in cold frames and in the field in Nassau County. Apparently this pest has been markedly held in check by the cold weather in Suffolk County. Flies are rather abundant around Phelps and Stanley, Ontario County.

CABBAGE APHID (Bravicornia brassicae L.)

- Virginia Herbert Spencer (May 9): To date the cabbage crop has had no insect outbreaks of importance and it is doubtful if any will occur this spring since the crop is practically made. It is rather unusual not to have reports of lice, but none have come to the attention of this station.

HARLEQUIN CABBAGE BUG (Murgantia histrionica Hahn)

- Missouri Neely Turner (May 30): About 35 per cent of the cabbage crop is damaged at Poplar Bluff in southeastern Missouri. Abundance is about double, compared with an average year. No natural enemies have been observed.

STRIPED FLEA-BEETLE (Phyllotreta vittata Fab.)

- New York W. D. Mills (April 15-May 15): This insect was first observed doing serious damage in Nassau County to seedlings in the cabbage seed bed and has since been observed in several seed beds. (May 3): Severe injury to cabbage seedlings occurred in one seed bed in Nassau County.
- E. W. Pierce (May 18): Flea-beetles are rather thick around

Stanley and a few around Phelps, in Ontario County.

STRAWBERRY

STRAWBERRY WEEVIL (Anthonomus signatus Say)

- New York C. C. Wagoner (May 18): Injury in one place amounted to 30 per cent. Infestation is general but is held down with dust in Ulster County. (May 19): Some growers have failed to make an attempt to control strawberry weevils and in such cases considerable damage is caused. In other fields the control appears to be good.
- P. D. Rupert (May 5): The first beetles were seen in Dutchess County on this date. (May 19): Work is progressing in control of the strawberry weevil.

STRAWBERRY FLEA-BEETLE (Haltica ignita Ill.)

- New York P. D. Rupert (May 18): Moderate infestation is reported in the Tivoli section of Dutchess County.

STRAWBERRY CROWN-BORER (Tyloclerum fragariae Riley)

- Missouri L. Haseman (May 1-8): This insect is reported in greater abundance in southwestern Missouri than in an average year.

FIRE ANT (Solenopsis geminata Fab.)

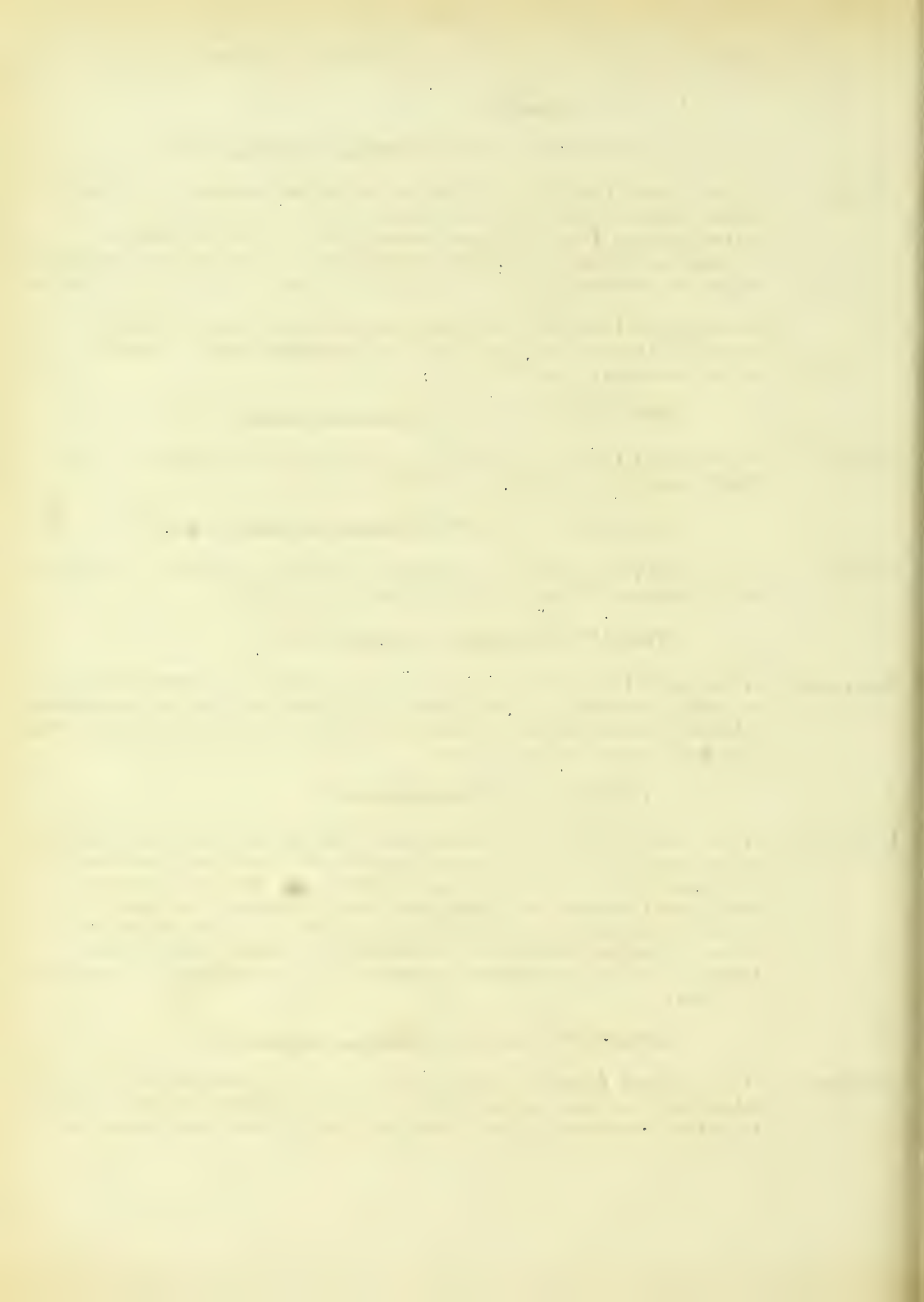
- Mississippi M. R. Smith (May 8): This species of ant has been complained of as being numerous and troublesome in flower beds and in strawberry patches. Specimens have been sent to this office from Clarksdale, Poplarville, and other places.

SLUG (Species Undetermined)

- Louisiana T. H. Jones (April 21): Slugs have been noted doing considerable damage to the fruit of strawberry at Baton Rouge and have also been taken under conditions indicating that they were injuring corn plants before they came above the surface of the ground. We have also received complaints of injury to strawberries by slugs at Denham Springs and to mustard and turnip greens at New Iberia. Cool, moist weather probably is responsible for abundance of slugs.

STRAWBERRY LEAF-BEETLE (Paria canella Fab.)

- New York C. C. Wagoner (May 5): Adults have been found abundantly in a planting of several acres in Ulster County. (May 18): This species is rather abundant in some locations; infestation is general but not serious.



ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

- Massachusetts A. I. Bourne (May 22): Asparagus beetles began to show up in the eastern part of the State about the first few days of May and are about as abundant as last year. One report from the county agent of Middlesex County reports them as very numerous in his county and, apparently, worse than last year. C. 12-punctata also is present.
- New York P. D. Rupert (May 18): Moderate infestation is noted in Dutchess County.
- Maryland E. N. Cory (May 19): Both species of asparagus beetle, Crioceris asparagi and C. 12-punctata L. are doing considerable damage to cutting beds and excessive damage to newly planted asparagus at Cambridge. They are much more abundant than in an average year.
- E. A. Hyslop (May 15): Very heavy infestation has been observed at Avoncl, eggs practically lining every twig and leaf. (May 27): The beetles are now defoliating asparagus. Larvae in some cases are full-grown.

BEANS

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

- Alabama E. L. Thomas (May 8): First record of the bean beetle was made at Auburn, in Lee County, and about 50 miles south of the known infested area of 1922.
- Mississippi R. W. Harned (May): We have just discovered this pest at Eastman, near Fulton. (May 12): On May 8 one of our inspectors found two infested gardens at Eastman in Itawamba County, which is only 14 miles from the Alabama line.

BEAN LEAF-BEETLE (Carotoma trifurcata Foerst.)

- Maryland J. A. Hyslop (May 25): All leaves on beans are badly riddled, with from 3 to 6 beetles to each plant. Infestation is very much more serious than in an average year.
- Illinois S. C. Chandler (May 12): This insect is badly riddling the leaves of string beans in many fields. It is present in practically all fields and nearly every plant is more or less eaten.
- Mississippi M. R. Smith (May 10): This pest is doing appreciable injury to beans in this section. The leaves of the plants are being badly riddled by the beetles, and in some cases it has been necessary to poison for them.

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Mississippi R. W. Harned (May 18): Almost daily we receive complaints from every section of the State regarding damage to beans, melons, etc., caused by the southern green plant-bug.

BEAN BEETLE (Bruchus obtectus Say)

New York G. E. Smith (April 16): This pest has been unusually abundant in Orleans County.

PLANT-LICE (Aphididae) .

Mississippi R. W. Harned (May 18): Almost daily we receive complaints from every section of the State regarding damage to beans, melons, etc., caused by plant-lice or aphids.

Pachystethus lucicola Fab.

New York C. R. Crosby: At Glen Head many beetles were found eating holes in the leaves of garden beans.

PEAS

PEA APHID (Illinoia pisi Kalt.)

New York W. D. Mills (May 19): This insect was first found in some numbers on May 18.

Virginia Herbert Spencer (May 9): The pea louse is occurring in numbers in the Tidewater section of Virginia and damage has been reported by several farmers in the vicinity of Norfolk.

Michigan R. H. Pettit (May 26): Yesterday I received word that the green pea louse was endangering and threatening the fields of alfalfa near Paw Paw. Today I received specimens of alfalfa completely loaded with the green pea louse from Allegan.

Ohio T. H. Parks (May 17): A few aphids have been found on young peas at Columbus. They are also common on sweet clover on the University Farm at Columbus. This is one legume pest the plant seems to accommodate. They are plentiful on red clover, but no visible damage is seen. Some Callipterus trifolii are among them. The weather was very dry during the last of April and has been rainy and cool the past 10 days. Specimens were sent in from two counties in northwestern Ohio with the statement that they were seriously damaging alfalfa. This aphid is present on alfalfa at Columbus, but no serious damage has been done.



- Kentucky H. Garman (May 16): Severe damage to alfalfa was observed in Monroe County on May 14, and in Gallatin County May 14. We have never before had this insect reported as injurious to alfalfa.
- Mississippi R. W. Harned (May 18): The pea aphid is making its appearance in Mississippi at the present time. Specimens have been taken from gardens at A. & M. College, Starkville, and Poplarville.
- Michigan R. H. Pettit (May 23): I have a report from the county agent at Cassopolis, who found specimens of plant-lice on alfalfa which prove to be the green pea louse. He reports them as having done considerable damage to alfalfa. (May 26): Yesterday I received word that the pea louse was endangering and threatening the fields of alfalfa near Faw Paw. Today I received specimens of alfalfa completely loaded with the green pea louse from Allegan.
- Iowa Fred D. Butcher (May 12): The county agent of Wapello County reports green aphids on 20 acres of alfalfa, with the leaves wilting and turning yellow. This is the first report in the State this year.
- Missouri L. Haseman (May 8): I am forwarding to you under separate cover samples of a green plant-louse that is invading the alfalfa fields in great abundance near Malta Bend. You will observe the high mortality caused, apparently, by some fungus disease, which leads me to believe that this pest will not do further serious damage this season. (May 16): We have had no further serious reports on the pea aphid on alfalfa in the last few days. In fact, judging by the condition of the samples received about the 3th, I am inclined to believe that the species in some fields at least is giving up to the parasitism, both by a fungus and by Hymenoptera. Lady-beetles and syrphid flies were not at all abundant in the sample examined, but hymenoptera and fungi seemed to be very prevalent on the samples. I dare say the inclosure of a few hours in the container may have influenced the fungus development, but if the pest in the open field shows anything like the degree of parasitism which the samples of a few hours in inclosure in the mason fruit jar showed, I feel sure the fungus is doing good work. (May 22): Scattered complaints continue to arrive from along the course of the Missouri River, from central Missouri to Kansas City.
- Kansas Roger C. Smith (May 3): I wish to report an outbreak of the pea aphid (Macrosiphum pisi) on alfalfa in the Kaw Valley. I have spent a part of two weeks studying this outbreak, and conducting control experiments. The first report we had was from the farm of the Boys' Industrial School, where about 60 acres were found to be heavily infested, at least half of which is seriously injured. I found infestations in other fields within a radius

of a mile from this one; otherwise fields from about 3 miles north of Topeka to Manhattan have only a few pea aphids in them and, in such cases, they are doing no appreciable damage. From Topeka to Kansas City, Kans., there are about half a dozen fields with spots that have been seriously injured. The heaviest infested fields are near Lawrence, Midland, Loring, and Bonner Springs. North of Kansas City, in the river bottoms, there are five fields of about 15 acres each that are heavily infested, three of which show serious injury. One of these fields, I fear, is a total loss. There was much crab grass in the field last fall and very good overwintering conditions were provided. The aphids reached outbreak numbers early and practically killed the alfalfa before it reached 6 inches height. Around Bonner Springs I visited four fields showing a heavy general infestation, each from small areas where the severest injury was located. At this writing the winged forms are spreading rapidly to other fields. I found garden peas heavily infested. The fungous disease has started in practically all of the worst infested fields, there being one to several pinkish or brownish dead aphids on nearly every stem. The ladybird beetles, the two-spotted, nine-spotted, and Caratoraxilla maculabris, and a lacewing fly, Chrysopa plorabunda, are present in fair numbers and increasing appreciably from week to week. The weather conditions are favorable now for the development of the fungous disease and the predators, so that we believe the peak of the outbreak has been passed.

Oklahoma E. E. Scholl (May 21): The pea aphid has been reported to be doing considerable damage to alfalfa in the western part of Oklahoma. These reports will be verified next week. A slight infestation was found by myself yesterday afternoon 4 miles west of Perkins, in Payne County.

California (See Alfalfa):

CUCUMBERS

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

- New York H. C. Hockett (April 24): At Riverhead adults are to be found in sheltered situations in the woods.
- Virginia Herbert Spencer (May 9): During the past week this insect was destructive to outdoor cucumbers in the neighborhood of Portsmouth. The cucumbers grown in cold frames were not affected.
- Kentucky H. Garman (May 16): Infestations were noted in Lee County April 30; in Russell County April 30; in Owsley County May 11, and in Whitley County May 14. This pest seems to be exceptionally common and destructive in the eastern end of the State.

Louisiana T.H.Jones: The following reports received, without specimens, probably refer to this species, though none have been noted in the vicinity of Baton Rouge: April 28, the county agent of Natchitoches Parish writes: "Striped bugs are trying to eat up our watermelons, cucumbers, and muskmelons." (April 29): The county agent of DeSoto Parish wrote that "bugs" that "must be the striped cucumber beetles" were injuring watermelon vines. (May 4): Agriculturist from Reserve, La., wrote for information as to the control of the "striped cucumber beetle, that is attacking about 2 acres of melons that we have under observation."

Mississippi R.W.Harned (May 18): Almost daily we receive complaints from every section of the State regarding damage to beans, melons, etc., caused by the striped cucumber beetle.

New Mexico W.E.Emery (May 7): Some fields were entirely taken, others not so badly infested.

A SPRINGTAIL (Sminthurus sp.)

Virginia Herbert Spencer (May 9): During the past week springtails were destructive to outdoor cucumbers in the neighborhood of Portsmouth. The cucumbers grown in cold frames were not affected.

MELONS

COTTON APHID (Aphis gossypii Glov.)

Mississippi R.W.Harned (May 18): Almost daily we receive complaints from every section of the State in regard to plant-lice or aphids doing damage to beans, melons, etc.

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Mississippi R.W.Harned (May 18): Almost daily we receive complaints from every section of the State in regard to the southern green plant-bug doing damage to beans, melons, etc.

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

Maryland J.A.Hyslop (May 10): We have the worst outbreak in the past five years in southern Montgomery County.

Kentucky H.German (May 16): Infestations were noted in Lee County April 30; in Russell County April 30; in Owsley County May 11, and in Whitley County May 14. This pest seems to be exceptionally common and destructive in the eastern end of the State.

Mississippi R.W.Harned (May 18): Almost daily we receive complaints from every section of the State regarding damage to beans, melons, etc., caused by the striped cucumber beetle.

MISCELLANEOUS FEEDERS

SQUASH BUG (Anasa tristis DeG.)

New York Henry Dietrich (May 23): Adults were noticed May 17 just emerging from hibernation.

STRIPED FLEA-BEETLE (Phyllotreta vittata Fab.)

Iowa Carl J. Drake (May 10): On May 5, I received a few specimens of the flea-beetle, Phyllotreta vittata Fabr., from Montrose. These beetles were destroying spinach and radishes in gardens.

CARROT RUSTFLY (Psila rosae Fab.)

New York C. R. Crosby (April 20): Infested carrot was received on this date from Whitesville.

COMMON MEALYBUG (Pseudococcus citri Risso)

Indiana B. A. Porter (May 24): Mealybug injury to canteloupes planted in seed beds was noted at Vincennes April 30. Many of the plants were reported as being killed by this insect which seems to be a new pest in that section.

CUTWORMS (Noctuidae)

Massachusetts A. I. Bourne (May 22): Cutworms have been reported from the eastern part of the State as about normally abundant and apparently causing the usual annoyance to market gardeners in that section of the State. The first report we have received of them in that section was about the 10th of May.

North Carolina P. Luginbill (May 11): Peas, cabbage, tomatoes, and other crops at Columbia have been damaged. The cutworms appear to be more numerous this year than for many years past.

A WEEVIL (Listronotus near tereticollis Lec.)

California W. D. Pierce (May 31): A specimen of Listronotus which is close to tereticollis Lec., but in bad shape for determination, has just been received from Stockton, through Prof. Essig, with the report it it was bred from tomato stems.

S O U T H E R N F I E L D - C R O P I N S E C T S

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

Mississippi B. R. Coad (May 17): Mr. Barber, of New Orleans, La., states that while waiting for a train he examined 60 or 70 cotton plants in a small field close to the railroad station at McNeill, in Pearl River County, finding 6 boll weevils. He

also states that indications were that many weevils were present in this field.

- Louisiana B. R. Coad (May 16): A single specimen was found while laying off plots for experimental work at Tallulah on May 16.
- Oklahoma E. E. Scholl (April 13): Four hibernation cages containing 500 weevils each were used to determine a percentage mortality of boll weevils in Oklahoma during the winter of 1922-23. These were located at Stillwater, Shawnee, Antlers, and Durant. Counts this spring indicate that an average of 0.2 of 1 per cent of boll weevils going into hibernation in the fall of 1922 were living the latter part of March, 1923. During the winter of 1921-22 the percentage of living weevils was 1.29. This shows a material increase in the winter mortality over the previous winter.
- Texas T. C. Barber (May 16): One field of stubble or volunteer cotton was seen today at Brownsville which contained a maximum infestation; every square being punctured and as many as 3 adults being observed in one blossom. Recent hot dry weather, however, has caused very heavy mortality in fallen squares and bolls. In general, the boll weevil infestation has been light to date, and climatic control has been very marked.
- B. R. Coad (May 1): Reports have been received from Edinburg that weevils were appearing as fast as squares on April 26. Damage to crop was not stated. (May 11): Information was received by wire on this date from Mission of serious damage to cotton. (May 21): Mr. Bondy reports that infestation counts on experimental plats made on May 15, 16, 17, and 23 indicate boll weevils present in fairly large numbers.

YELLOW STRIPED ARMYWORM (Prodenia ornithogalli Grote)

- Mississippi R. W. Harned (May 18): We have received complaints regarding this insect from two places in this State. From Lucedale we have received specimens of this insect damaging tomato plants. From Seminary we have received specimens taken from cotton.

ST. ANDREW'S COTTON STAINER (Dysdercus andreae L.)

- Porto Rico R. E. Danforth (May 19): The St. Andrew's cotton stainer is exceedingly abundant now on the cotton to the south of us, about Lajas and Boqueron.

TOBACCO

TOBACCO FLEA-BEETLE (Epicrix parvula Fab.)

- Kentucky H. Garman (May 16): This insect is injurious to plant beds in Fayette County.
- Maryland J. A. Hyslop (May 23): The tobacco flea-beetle is damaging plant beds in southern Maryland.

TOBACCO THRIPS (Frankliniella fusca Hinds)

Florida F. S. Chamberlin (May 18): The tobacco thrips, Frankliniella fusca, is becoming rather numerous here at the present time. The increase of this pest and the resulting damage will depend largely upon the rains.

. SOUTHERN TOBACCO HORNWORM (Protoparce sexta Joh.)

Florida F. S. Chamberlin (May 18): The southern tobacco hornworm, Protoparce sexta, is appearing in very limited numbers. Emergence has apparently been delayed by the cool temperatures this spring.

. SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Florida F.S. Chamberlin (May 18): The southern green plant-bug is now common in tobacco shades and is doing some damage.

SUGAR CANE

. . SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana T.E. Holloway and W.E. Haley (May 3): Larvae of the first, second, and third instars have been noted in corn and sugar-cane plants (first generation) at New Orleans.

F O R E S T A N D S H A D E - T R E E I N S E C T S

MISCELLANEOUS FEEDERS

PERIODICAL CICADA (Tibicen septendecim L.)

. . BROOD XIV (SEVENTEEN-YEAR RACE).

Maryland J.A. Hyslop (May 31): I found a cast skin on the flower head of a mountain laurel in my pasture, at Avanel, this morning. Being on the flower head, it necessarily emerged within the past two weeks. This may be a straggler of Brood XIV due here this year, but no swarm has appeared as yet.

Virginia W. McAtee (May 27): I collected a single individual today at Maywood. No brood has been observed.

PERIODICAL CICADA (Tibicen septendecim L., race
tredecim Walsh and Riley)

. . BROOD XXII (THIRTEEN -YEAR RACE).

Mississippi R.W. Harned (May 23): We have already received specimens this year of the periodical cicada from four counties, Adams, Jefferson, Claiborne, and Warren. You will note that they have not been



previously reported from Warren County, but a boy at Bovina, Warren County, sent us several hundred specimens. We are making a special effort to try to get them from other counties, if they are appearing in other counties.

G. H. Kent: The 1923 brood of the periodical cicada appeared in Franklin County in large numbers during the early part of May. I have observed this brood in 1871, 1874, 1897, and 1910. I have also observed that stragglers occur the year following each brood in quite considerable numbers.

Louisiana T. H. Jones (May 8): Under date of May 9, I sent Dr. Howard specimens of what may be called the periodical cicada collected at Magnolia, La., on May 8.

BROWN-TAIL MOTH (Euproctis chrysorrhoea L.)

Massachusetts A. I. Bourne (May 22): The brown-tail moth in Essex County is reported as occurring in very small numbers -practically of no consequence in orchards. The same is true of orchards in Littleton, in Middlesex County, no increase over the numbers occurring last year having been found. In northern Worcester County (Harvard) the infestation is found to be very slight. There is a probable increase estimated at 5 per cent over last year's occurrence. Much of the same report has been received from Lunenburg in the same county, a slight increase being apparent from last year's numbers. In Plymouth and Bristol Counties they are reported as being, thus far, of very little consequence, and not having found more abundant than last year.

GIPSY MOTH (Porthetria dispar L.)

Massachusetts A. I. Bourne (May 22): Gipsy moths are reported as very abundant from nearly all sections of the State normally infested. From Essex County (Salisbury) they have been reported as very abundant. They began to hatch about May 10, and were about as abundant as last year. In the town of Littleton, in Middlesex County, they are reported to be abundant but no more so than last year. From Harvard, in northern Worcester County, they are reported as very abundant- slightly worse than last year. From Plymouth and Bristol Counties the reports indicate that there are no more than last year, and in some cases they are greatly reduced in numbers from 1922. On the Cape, generally, they seem to be practically as abundant as last year.

FOREST TENT CATERPILLAR (Malacosoma disstria Huebn.)

West Virginia W. E. Rumsey (May 12): Wild cherry trees near Cherry Run are chiefly attacked by this insect.

EVERGREEN BAGWORM (Thyridopteryx ephemeraeformis Haw.)

New York Henry Bird (May 19): Eggs are as yet unhatched, but indications are that there will be a greater invasion from this species in the locality of Rye than has been experienced for some time.

Missouri L. Haseman (April 16-May 8): Usual spring complaints are made in various sections of the State where abundant cocoons are attracting attention on arborvitae trees, cedars, and evergreens. Some fruits are being attacked.

ELM

ELM LEAF-BEETLE (Galerucella luteola Mull.)

Maine E. M. Patch (May 9): Hibernating adults were found in great numbers in an open chamber at Augusta.

New York Henry Bird (May 19): Hibernating adults are very scarce, and there promise to be no more than random, isolated colonies of this insect at Rye, as was the case in 1922. Ordinarily by this date one sees many of the beetles about, but so far I have noted only one specimen.

HICKORY

HICKORY BARK-BEETLE (Scolytus quadrispinosus Say)

Michigan R. H. Pettit (May 15): On May 15, specimens of the hickory bark-beetle were brought in from near Ypsilanti. A section of hickory was brought in showing the workings of this Scolytid, and many dead trees were reported on farms. (I advised the immediate cutting of all trees badly affected, the burning of the tops, and the sinking of the logs in water).

MAPLE

WOOD LEOPARD MOTH (Zeuzera pyrina Fab.)

New Jersey H. B. Weiss (May 15): One partly grown larva was found in maple at Trenton.

FALL CANKERWORM (Alsophila pometaria Harr.)

Ohio H. A. Gossard (May 11): On March 20, the fall cankerworm moth was received from Willoughby on maple.

APHIDS (Aphididae)

New York Roy Latham (May 5): Aphids are very abundant at Orient, Suffolk County, on the leaf buds of maple trees. They were first seen on May 1. The migrating warblers are again feeding on them and probably will control this insect, as in 1922.

OAK

GALLS (Cynipidae)

Georgia O. I. Snapp (April 20): Cynipid galls, thought to be the alternate generation of Andricus coronus, were collected from water oak trees on the streets of Fort Valley.



OAK LECANIUM (Lecanium quercifex Fitch)

- South Carolina J. A. Berly (May 24): This scale insect appears every spring in this State, and at Saluda and Hodges it appeared on water oak in numbers sufficient to warrant control measures.
- Georgia O. I. Snapp (April 19): An exceedingly heavy infestation of this Lecanium was noted on water oaks at Reynolds. The owner of the tree is using a lubricating-oil emulsion.

PINE

A LECANIUM (Lecanium numismaticum Pettit & McDaniel)

- Mississippi R. W. Harned (May 18): A species of Lecanium new to this State has been collected on pine at Hazlehurst. Miss McDaniel, of the Michigan Agricultural College, has identified this species as L. numismaticum.

PINE LEAF SCALE (Chionaspis pinifoliae Fitch)

- New York C. R. Crosby (April 20): At Spring Valley trees are badly infested. (May 7): Infested pine leaves were received from Linwood.
- Ohio H. A. Gossard (May 11): The pine scurfy scale was received February 19, from Lorain on pine.
- Indiana J. J. Davis (May 22): Eggs of this insect began to hatch at LaFayette on May 21. Scales sprayed with 2 per cent lubricating-oil emulsion are hatching just as vigorously as those not treated. Apparently, the emulsion was ineffective against the eggs.
- Nebraska M. H. Swenk (April 15-May 15): Several reports of injury by the pine leaf scale were reported on ornamental spruced and pines.

PINE BARK-LOUSE (Chermes pinicorticis Fitch)

- New York M. D. Leonard (May 14): Specimen of infested bark was received from Williamsville with request for control measures. (May 15): At Albany an ornamental pine on a front lawn is badly infested.

WESTERN PINE BEETLE (Dendroctonus brevicomis Lec.)

- Oregon and California Monthly News Letter, Bureau of Entomology, Vol. 108, (April): On the Southern Oregon-Northern California Cooperative Control Project, to control an epidemic of the western pine



beetle, F. P. Keen reports that spring work has already started and that five camps are now in operation with over 100 men on the payroll. Other camps will be opened as fast as snow conditions and available labor supply will permit. Two hundred men are probably at work at the time this is being written.

A SATURNID MOTH (Coloradia pandora Blake)

Oregon

Monthly News Letter, Bureau of Entomology, No. 108, (April): J. E. Paterson has reported recent defoliations of pine timber on the Klamath Indian Reservation by the larvae of a moth, Coloradia pandora Blake. Areas of heavy defoliation of pine were found. The insect can be controlled by the use of fire during the feeding period of the larvae. Ground debris is fired and burned under the infested trees, which caused the caterpillars to become stupified and fall to the ground. Great precautions should be taken to prevent forest fires. The pupae of the moth were used as food by the Klamath and Modoc tribes of Indians and were considered a delicacy when roasted. It is believed that this is the first record of the use of pupae as food by western Indians.

POPLAR

A BUCK MOTH (Hemileuca nevadensis Stretch)

Nebraska

M. H. Swenk (April 15-May 15): The presence of an abundance of the egg rings of Hemileuca nevadensis in a poplar grove in Cheyenne County was reported May 4. The eggs hatched in our Laboratory at Lincoln on May 14. Last year, for the first time of which we have a record, this caterpillar proved injurious to cottonwood and orchard trees in this State, the injury being in Lincoln County.

SPRUCE

SPRUCE BUDWORM (Harmodora fumiferana Clem.)

Michigan

R. H. Pettit (May 23): I report the presence of the spruce budworm on spruce sent in from Fosters. Miss McDaniel reports the emergence of adult moths this morning. This emergence is hastened no doubt, by the fact that they were kept in the insectary from the tenth instant until the present time.

INSECTS ATTACKING GREENHOUSE

AND ORNAMENTAL PLANTS

LAWNS

ANTS (Formicidae)

Nebraska

M. H. Swenk (April 15-May 15): There has been much complaint, during the period covered by this report, of injuries by ants in lawns in the larger cities of eastern Nebraska.



A BEE (Andrena erythrogaster Ashm.)

Indiana H. J. Davis (May 24): Specimens of Andrena erythrogaster Ashm., (Frison determination) were received from Shoals on May 1, being reported as digging into a lawn to such an extent that they were disfiguring the lawn and called for control measures.

MISCELLANEOUS

EUONYMUS SCALE (Chionaspis euonymi Comst.)

Delaware C. C. Houghton (April): This species appears to be increasing in numbers in this State. Cuttings from very heavily infested plants have recently been brought in for determination of the pest.

BLACK PLANT-BUG (Irbisia brachycerus Uhler)

California H. E. Burke (May 31): Swarms from grasses to many cultivated shrubs and plants, as dahlia, buddleia, are causing severe damage.

JAPANESE BEETLE (Popillia japonica Newm.)

New Jersey Monthly News Letter, Bureau of Entomology, No. 108 (April): C. H. Hadley, in charge of the Japanese beetle laboratory of the Bureau at Riverton, writes that recent examinations in the field have shown no appreciable grub mortality as a result of weather conditions during the winter just past. Occasional spots have been found where there has been comparatively slight mortality during the winter, but the mortality has been so low as to have no practical importance. A material increase in density of infestation by the beetle throughout the heavily infested area, and probably a corresponding increase in density throughout the entire infested area, may therefore be anticipated for the coming season.

COTTON RED-SPIDER (Tetranychus telarius L.)

Georgia O. I. Shapp (May 1): Red-spiders have been the cause of severe injury to ornamental plants in the parks of Fort Valley.

CHRYSANTHEMUMS

CHRYSANTHEMUM GALL MIDGE (Diarthronomyia hypogaea Loew.)

Connecticut W. E. Britton (April 10): This insect has been found on small plants under glass at Rowayton.

Ohio H. A. Gossard (May 11): On January 17, we received this pest from Cleveland, attacking chrysanthemums.



ARBORVITAE

ARBORVITAE LEAF-MINER (Argyresthia thuiella Pack.)

Connecticut W. E. Britton (May 17): This insect is reported as seriously injuring arborvitae around Stamford and New Canan in Fairfield County. It is much more abundant than in the average year.

MAGNOLIA

CHAFF SCALE (Parlatoria pergandii Comst.)

Georgia O. I. Snapp (May 1): This scale, determined by Mr. H. Morrison, is heavy on magnolia twigs and foliage at Fort Valley.

HOLLY

A BLISTER BEETLE (Macrobasis torsa Lec.)

Mississippi R. W. Harned (May 18): Some blister beetles, taken on holly trees by an inspector at Poplarville, proved to be Macrobasis torsa Lec., a species that has never before been collected in this State.

BOXWOOD

BOXWOOD LEAF-MINER (Monarthronalpus buxi Labou)

New York Mr. Beutenmuller (May 21): During 1922 many thousands of boxwood plants in Woodlawn Cemetery, at Woodlawn, were badly infested. Apparently, the authorities wish to take vigorous action against this pest this season.

CANNIA

LESSER CANNA LEAF-ROLLER (Geshna cannalis Quaint.)

Mississippi R. W. Harned (May 18): The lesser canna leaf-roller has been attracting considerable attention in this State during the past few weeks.

JASMINUM

WHITEFLIES (Aleurodidae)

Georgia O. I. Snapp (May 1): Whiteflies have damaged cape jasmines considerably in the vicinity of Fort Valley.



INSECTS AFFECTING MAN AND DOMESTIC
ANIMALS

MAN

SALT-MARSH MOSQUITO (Aedes sollicitans Walk.)

New York Roy Latham (May 5): The salt-marsh mosquito were first troublesome on April 15 in Suffolk County.

Henry Bird (May 19): The salt-marsh mosquito has not been observed this year at Rye. It is of little consequence at the present time in this locality on account of a strenuous campaign against it some years back. Fresh-water species are not noticeable on the wing at this date, although during the past few days Aedes sollicitans Walk. has been emerging.

YELLOW-FEVER MOSQUITO (Aedes aegypti L.)

Louisiana W. V. King (May 25): Adults were troublesome about houses by the middle of May. This is unusually early for this locality, Madison Parish, and Mound, La., as the species does not usually over-winter here.

Texas F. C. Bishopp and assistants: Reports have been received that adult yellow-fever mosquitoes were observed in the vicinity of Galveston and Houston early in May. No specimens were positively identified. No adults of this species have been observed in Dallas.

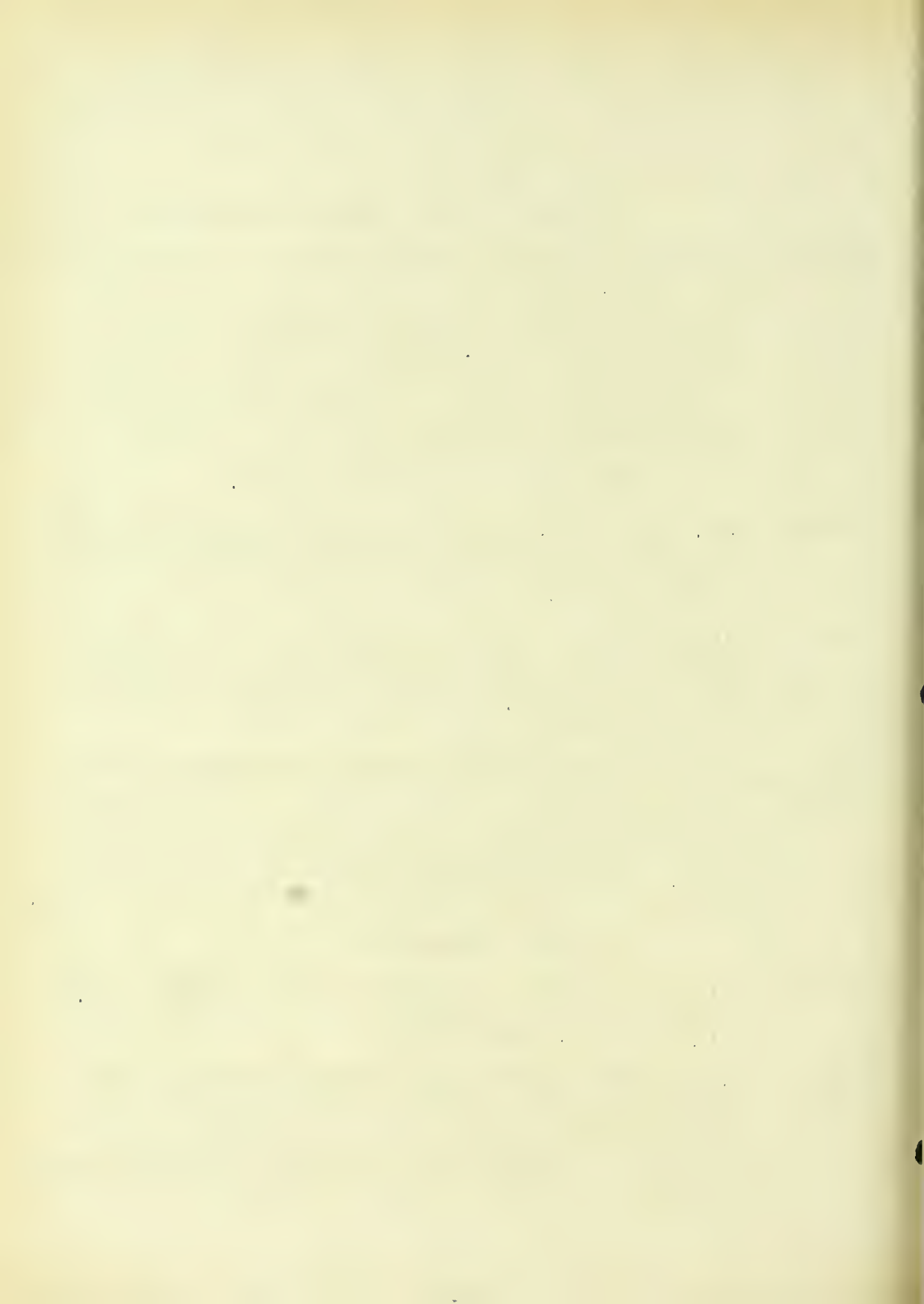
MALARIA MOSQUITO (Anopheles quadrimaculatus Say)

Louisiana W.V.King (May 25): The malaria mosquito has not been found in troublesome numbers by the last of May. This is a month of six weeks later than usual and is due to a cool stormy spring. The recorded rainfall for this locality, Madison Parish, and Mound, La., since the first of the year is 45 inches.

FLEAS (Siphonaptera)

Missouri L. Haseman (May 8): The usual spring complaints from various sections of Missouri have been received, abundance as compared with last month becoming worse.

Texas F. C. Bishopp (May 25): Numerous reports of the infestation of houses and yards by cat and dog fleas have come to the laboratory during the past three weeks. Investigation of a number of these show that the cat flea (Ctenocephalus felis Bouche) is the predominant form. No human fleas Pulex irritans L., have been taken in connection with these infestations at Dallas.



BLACK FLY (Simulium sp. prob. pecuarum Riley)

Louisiana T. H. Jones (May 10): This fly is common enough, especially early in the morning and late in the afternoon, to cause considerable annoyance.

CHIGGERS (Trombicula tlalzahuatl Murray)

North America Monthly News Letter, Bureau of Entomology, No. 108 (April, 1925): The question is often asked how many species of chiggers there are in North America. Based on the material submitted for identification through the channels of the Bureau and the National Museum, Dr. Ewing finds that there is only one common species in North America. This species is Trombicula tlalzahuatl, and is generally distributed in North America, and from the Atlantic Ocean to the Rocky Mountains.

Texas F. C. Bishopp (May 23): Redbugs or chiggers, which first began annoying man about May 1, have greatly increased in numbers during the past two weeks.

CATTLE

OX WARBLE (Hypoderma bovis DeG.)

New Hampshire P. R. Lowry (May 1): Ox warble infestation is light but general in the vicinity of Durham.

New York R. W. Wells (April 21): The earliest reported activity of the warble fly was received from the locality of Middletown.

SCREWORM (Chrysomya macellaria Fab.)

Texas O. G. Babcock (May 16): This insect has been on a gradual increase since the beginning of the month. Catches in traps show for the last week approximately 50 per cent screwworm flies. Very few cases of screwworm have been reported to date. The hot weather has apparently tended to increase this species at Sonora and in west Texas.

D. C. Parman (May 19): Cases of screwworms have not increased during the month to any extent, but in a few instances where cattle have been branded there are a good number of cases.

F. C. Bishopp (May 23): Screwworm flies are gradually increasing in numbers about slaughterhouses, but comparatively few cases of infestation in animals have been observed.



HORN FLY (Haematobia irritans L.)

- New York R. W. Wells (April 31): This is the earliest appearance of the horn fly this season.
- Louisiana T. H. Jones (May 12): Mr. W. G. Bradley, Assistant Entomologist of the Experiment Stations, reports the horn fly as being more numerous at the L. S. U. dairy farm than at any time this year.
- Texas O. G. Babcock (May 16): In west Texas, in the Sonora District, flies are fairly numerous, 150 to 250 per animal, gathering a little about the horns. For the past three weeks the horn flies have been on a gradual increase, in spite of the hot dry weather that has prevailed for the past two weeks.
- D. C. Parman (May 19): At Uvalde, the numbers of this pest are about the same as last month or slightly less (500 to 3,000 per animal).
- F. Bishopp (May 21): Horn flies have increased in May at Dallas, as is normal in this section. Much annoyance is being caused by them and dairymen are using sprays considerably.

A HORSEFLY (Tabanus rufipectus Macq.)

- Louisiana T. H. Jones (May 10): During the latter part of April and the early part of May this species was common, especially on the ears of live stock, in the vicinity of Baton Rouge. It was the most common and injurious species observed on live stock during this period.

A HORSEFLY (Tabanus rubescens Bellardi)

- Texas D. C. Parman (May 19): The green-heads are appearing in the mountains at Uvalde in noticeable numbers (0 to 5 on animals). The first appearance was about May 10. The eggs were found in small numbers on the stones in the rivers on May 17.

STABLE FLY (Stomoxys calcitrans L.)

- Texas F. C. Bishopp (May 23): Stable flies have increased materially during the last three weeks at Dallas. In some instances the number of flies per animal ranged from 100 to 300.



D. C. Parman (May 19): Quite an outbreak of the straw-stack or stable fly has been reported at Sabinal, 35 miles east of Uvalde, in the farming district. The increase at Bralle has been noticeable, but rarely more than 5 to 25 flies are on an animal at one time.

BLACK BLOW-FLY (Phormia rerina Meig.)

Texas O.G. Babcock (May 16): Very few cases of wool maggots have been reported to date in Sonora, Edwards Plateau. Sheep are nearly all sheared, which is an important factor in avoiding damage.

O. G. Babcock (May 16): Phormia rerina has been more abundant than usual for the past three weeks, with very heavy catches in traps; but the sudden hot and dry weather is proving detrimental, with a corresponding decrease in numbers and a contrary increase in numbers of the screwworm fly.

HOUSE FLIES (Musca domestica L.)

Texas F. C. Bishopp (April 23): There has been no material increase in house flies during the last month at Dallas. Numbers are now about normal.

A Gnat (Culicoides biguttatus Coq.)

Louisiana T.H. Jones (April 11): Prof. O. W. Rossall of the Louisiana State University reports this species, which was determined by Dr. J. M. Aldrich, as being very abundant on the udder of a cow late in the afternoon of this date, and also biting the collector.

POULTRY

BARN-SWALLOW BUG (Oeciacus vicarius How.)

Ohio H. A. Gossard (May 11): On January 17, we received from Westerville, Ohio, the barn-swallow bug captured from a poultry house.

CHICKEN LICE (ALL SPECIES)

Texas F. C. Bishopp (May 23): Chicken lice, especially Menopon bisereatum Pidgeot and heteroglyphus Nitzsch are present in about normal numbers. Losses this spring, especially among young chicks, have been materially reduced, owing to the more general use of sodium-fluorid on the fowls.

CHICKEN MITE (Dermanyssus gallinae Reali)

Texas F. C. Bishopp (May 23): Several very heavy infestations of poultry houses by chicken mites have been reported in this district. Some loss among young chicks and through setting hens being forced to abandon their nests have been brought to our attention. The abundance of the species is probably no greater than normal at Dallas.

CHIGGERS (Trombicula tialzahuatl Murray)

Texas F. C. Bishopp (May 23): Young chickens are reported from Dallas to be severely injured and some killed by chiggers.

HENHOUSE BEEBUC (Haematosiphon inodorus Duges)

Missouri L. Haseman (April 25): This insect is generally distributed over Missouri.

FOWL TICK (Argas miniatus Koch)

Texas D. C. Parman (May 19): Quite severe losses have been had in some flocks and the infestations of larvae are at this date the heaviest ever observed. Some houses are literally covered with the migrating larvae at all times of the day under favorable weather conditions.

SHEEP AND GOATS

SHEEP BOT-FLY (Oestrus ovis L.)

New Hampshire P. R. Lowry (April 30): Two sheep in the University herd which died were found rather heavily infested with this pest.

BUCKING GOAT LOUSE (Linognathus stenopsis Burm.)

Texas O. G. Babcock (May 16): At Sonora, Edwards Plateau, this pest is increasing in numbers. It will no doubt be more numerous from now on up to a limiting degree of lousiness. Considerable damage is expected to be done to the spring crop of kids.

INSECTS INFESTING HOUSE AND

PREMISES

HOUSE CRICKET (Gryllus domesticus L.)

Connecticut W. E. Britton (April 25): This cricket was exceedingly abundant in a basement of an apartment house at New Haven.

CLOTHES MOTHS (Tinea pellionella L.)

New York Roy Latham (May 5): Clothes moths were seen flying in houses on May 5.



TERMITES (Reticulitermes flavipes Kol. and
R. virginicus Banks.)

- Pennsylvania T. L. Guyton (May 10): Inquiries are coming in from several parts of the State.
- Indiana H. F. Dietz (May 19): Ten cases of termite damage to buildings in Indiana have been reported to me since April 27. In five cases specimens of the winged colonizing adults have been obtained and determined as follows: Reticulitermes flavipes, two cases, both from Indianapolis, on April 22 and 25, and one from Franklin on April 25. The other reports are from Richmond, April 28, Dupont, May 6, and North Madison, May 16, but no specimens of identifiable forms were obtainable at the time of inspection, which was several days after swarming took place.
- J. E. Davis (May 22): White ants are continuing their serious depredations, two noticeable cases of injury being reported to us, one April 3, from Hartford City, Indiana, and the other May 21, from LaFayette.

A MIDGE (Chironomus sp.)

- Indiana J. J. Davis (May 22): On May 8 we received chiromomid larvae which were reported abundant in a cistern at Salem. Dr. O. A. Johannsen determined the larvae as Chironomus sp. "species closely allied to either decorus or cristatus."

ANTS (Formicidae)

Crematogaster lineolata Say

- Mississippi M. R. Smith (May 23): Specimens of this ant were received from T. F. McGehee, who states that the ants were taken from the porch of a home in Coldwater, Miss. This species is an occasional house pest in Mississippi.

Pheidole flavens Roger, subsp. floridana Emery.

- Mississippi M. R. Smith (May 19): Workers of this species have been sent in from Ocean Springs. Nothing is known concerning its habits or distribution.

TINY RED ANT (Monomorium pharaonis L.)

- Mississippi M. R. Smith (May 19): The tiny red ant, or "Pharaoh's ant", is widely distributed throughout the State and is a very important house-infesting species.

ARGENTINE ANT (Iridomyrmex humilis Mayr)

Mississippi M. R. Smith (May 19): The Argentine ant is now known from about 70 towns in this State and there are doubtless other infestations of which we have no record. (May 27): Specimens of the Argentine ant received today from Alfred Lutken of Picayune show sexed forms, eggs, larvae, and pupae present in the nest.

California W.D.Pierce (May 31): Argentine ant. is very bad around the entire Bay Region, especially at Oakland, Alameda, San Francisco, San Mateo and Palo Alto.

. . . Solenopsis geminata Fab. subsp. rufa Jerdon

Mississippi M. R. Smith (May 19): This subspecies has only been found in one town in this State, Tupelo. Nests are built under the concrete sidewalks or in the soil around the basements of stores and houses. (May 20): The fire ant continues to be the source of much complaint from all parts of the State. Nests are constructed in flower beds, strawberry beds, and yards. The workers are very vicious and sting one on the least provocation. One mother reports that she is afraid to let her baby in the yard because of the stings of these ants.

. . . Tetramorium guineense Fab.

Mississippi M. R. Smith (May 19): This species has been found at Gulfport, Biloxi, and Pascagoula. It is also a house-infesting species.

LITTLE BLACK ANT (Monomorium minimum Buckley)

New York Roy Latham (May 5): Black ants were active in houses March 30 and have been exceedingly bad ever since.

. . . CRAZY ANT (Prenolepis longicornis Latr.)

Mississippi M.R.Smith (May 19): This ant occurs at Gulfport and Biloxi, where it infests only a few blocks. It is generally known as the crazy ant, and although infesting stores, houses, etc., it is far from being the pest that the Argentine ant is.

. . . Camponotus socius Roger

Mississippi M.R.Smith (May 19): This ant is present in Waynesboro and Benoit. It was formerly known only from Florida, but the writer has recently seen specimens in Doctor Wheeler's collections from Georgia, North Carolina, and Alabama. This information tends to show that the ant is becoming distributed throughout the Southern States.



Camponotus fallax Wyl., subsp. rasilis (Walker)

Mississippi M.R. Smith (May 8): This ant has been found infesting a house in Starkville. The workers show a decided fondness for sweets, such as sugar, sirup, pastries, etc. This species has never been recorded before as a house-infesting ant so far as the writer knows. It has also recently been reported from Louisiana by Mr. T. H. Jones.

Several species

Mississippi M.R. Smith (May 19): According to their importance as house pests, the writer would rank those infesting houses in the State as follows:

- 1: - - - Iridomyrmex humilis Mayr
- 2: - - - Monomorium minimum Buckley
- 3: - - - Monomorium pharaonis L.
- 4: - - - Solenopsis geminata Fab.
- 5: - - - Solenopsis molesta Say
- 6: - - - Cremastoraster sp.
- 7: - - - Preholepis imparis Say
- 8: - - - Iridomyrmex analis Andreæ

ST O R E D - P R O D U C T I N S E C T S

BEAN WEEVIL (Mylabris obtectus Say)

New York Leland J. W. Jones (May 16): This insect is reported attacking lima and kidney beans in storage at Bainbridge.

Ohio H. A. Gossard (May 11): On February 17 we received from Cleveland the bean weevil in stored beans. (February 19): The same species was received in beans from Elyria.

PEA WEEVIL (Bruchus pisorum L.)

Utah Ira M. Hawley (May 14): Much of the seed sold in northern Utah is badly infested.

CONFUSED FLOUR BEETLE (Tribolium confusum Duv.)

Ohio H. A. Gossard (May 11): On February 7 we received the confused flour beetle from Delaware, Ohio, where it was attacking stored wheat.

RICE WEEVIL (Calandra oryza L.)

Ohio H. A. Gossard (May 11): On February 7 the rice weevil was sent us from Delaware, Ohio, in stored wheat.



DARK MEALWORM (Tenebrio obscurus L.)

Oklahoma E. E. Scholl (April 30): We have two very interesting reports of the large mealworm infesting sterilized cotton seed shipped into Oklahoma from Texas. The seed, however, was stored in old bins for about six weeks and the chances are that the condition of the seed after being treated was congenial for the larvae of this pest.

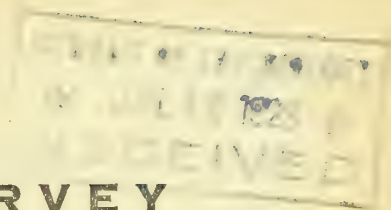
A SEED WASP (Megastimus sp., near Lasiocarpae Crosby)

Mississippi R.W.Harned (May 18): During April, Mr. T.G.Gwen, a florist at Columbus, Miss., sent to this office a bag of Cedrus atlantica seed that he had received from a firm in Philadelphia, Pa. This seed was infested with insects which were identified by specialists in the Bureau of Entomology as Megastigmus near lasiocarpae, and a species probably new to this country. A letter from the firm in Philadelphia revealed the fact that this bag of Cedrus atlantica seed had been obtained in Europe.

INDIAN MEAL MOTH (Plodia interpunctella Huebn.)

Ohio H. A. Gossard (May 11): We received the Indian meal moth on March 13, from Cincinnati, moths having attracted notice from flying in numbers in a dwelling house.





THE INSECT PEST SURVEY BULLETIN

A periodical review of entomological conditions throughout the United States,
issued on the first of each month from April to November, inclusive

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UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING



OUTSTANDING ENTOMOLOGICAL FEATURES IN THE UNITED STATES FOR JUNE, 1923.

The past month has been one of unusual insect abundance throughout the greater part of the country.

Cutworms of several species attacking practically all field and truck crops have been reported from the entire northern part of the country, reports of serious injury coming from Massachusetts, New York, Michigan, Iowa, South Dakota, and Idaho, an unusual wireworm injury to both cereals and truck has been reported from Ohio, Indiana, and Illinois in the East-Central States, and from Montana, Idaho, and Washington in the Northwest.

Serious grasshopper outbreaks have been very general over the upper Mississippi Valley, through the Rocky Mountain region, and along the Pacific Coast. Reports of outbreaks have been received from Wisconsin, North Dakota, Nebraska, Kansas, Texas, Wyoming, Utah, Oregon, and northern California. In the Klamath Lake region of California poisoned bran bait was being distributed at the rate of 10,000 pounds daily.

Heavy flights of June beetles occurred in parts of New York, Illinois, Wisconsin, and South Dakota; on Long Island, and in parts of southeastern South Dakota the heaviest flights that have been observed in years were recorded this year.

By the middle of the month the chinch bug was migrating from small grain to corn in Indiana. The situation relative to this insect, however, looks much more favorable than earlier in the season over the greater part of the chinch bug region. Egg laying was generally delayed by the backward season and heavy rains associated with the fungus disease and egg parasite in Illinois, Nebraska, Kansas, and South Dakota have materially reduced the infestations.

Hessian fly injury will be severe in Iowa and Nebraska owing to the heavy spring brood of flies and wheat is damaged from 2 to 25 per cent in parts of Illinois and Missouri by the jointworm. In some fields in Greene County, Missouri, 12 per cent of the straw is down owing to the feeding of the latter pest.

The boll weevil is emerging in fairly large numbers throughout the Cotton Belt; indications have already been reported of heavy broods in Georgia and Texas. A suggestion is made that dusting for the boll weevil tends to increase damage by cotton aphids by killing lady-beetles which feed upon this pest.

The pale striped flea-beetle is doing unusual damage to corn and truck crops, particularly to beans, in Indiana, Illinois, and Virginia.

The seed-corn maggot is again appearing in unusual numbers in parts of New York, Illinois, and Tennessee. In the last State the outbreak was decidedly more serious on land where fresh tankage fertilizer had been used. A similar association of this pest with organic fertilizers was noted in 1921, when an unusual outbreak of this pest occurred along the Atlantic Coast.



The rosy apple aphid was reported as unusually abundant in central New York, southern Pennsylvania, Ohio, and Illinois. The season seems to be one of very severe aphid injury, many species having been reported.

A new species of aphid on birch is occurring in such numbers in the cities of southern Connecticut as to be a nuisance.

Codling moth injury is reported as generally normal over the Eastern States, somewhat above normal in the East-Central States, and decidedly below normal in the Pacific Northwest.

The apple tent caterpillar has been unusually numerous in eastern Massachusetts, and moderately abundant in New York State, southern Pennsylvania, Delaware, Wisconsin, and Minnesota, especially where orchards have not been well cared for, and the forest tent caterpillar is reported as more numerous than usual in eastern Massachusetts, Connecticut, New York, and New Jersey. In Oregon the pest occurred in such numbers near Corvallis as to occasion newspaper write-ups of trains being delayed by hordes of these insects on the tracks.

The cankerworms attacking both orchards and forest trees are reported as normally abundant in New York, New Jersey, Wisconsin, Minnesota, and Iowa.

The imbricated snout-beetles are reported as defoliating apple trees in Illinois and Nebraska, and the oriental fruit-moth threatens considerable damage to late peaches in Virginia.

The rose chafer is occurring in very unusual numbers throughout the New England and Middle Atlantic States as far south as North Carolina and Tennessee, and west to Indiana.

The grape leafhoppers are appearing in alarming numbers in the grape-growing sections of New York, Pennsylvania, and Ohio.

Last year we reported the occurrence of an *Anomala* as very destructive to sugar cane in Hawaii. This is occurring in a nursery in Connecticut. What is supposed to be the larva of this species is reported from the same vicinity, where it is infesting lawns.

Brood XIV of the periodical cicada is reported as appearing in large numbers in eastern Massachusetts; central Long Island; Adams County, Pa.; Clarmont County, Ohio; and Tennessee, and scatteringly in Maryland, Virginia, and Indiana. Brood XII of this insect appeared in large numbers in the six counties where it was reported in past years in Mississippi, and also in three additional counties in that State. In Louisiana it appeared in Livingston, East Baton Rouge, Ascension, West Feliciana, and West Feliciana Parishes.

OUTSTANDING ENTOMOLOGICAL FEATURES FOR CANADA FOR JUNE, 1923.

A heavy set of fruit, with the possible exception of plums in certain sections, is reported from the orchard sections of Canada. Cereal crop prospects in the Prairies are excellent. The early part of June was cool and rather wet in



western Canada and warm and dry in the east. In northwestern Quebec plant and insect activities centering about the time of the opening of the balsam buds were relatively several days earlier than the past two years despite the cold spring. A heavy smoky atmosphere resulting from forest fires apparently raised the night temperatures and possibly accounts for the early conditions.

The strawberry weevil is the cause of many inquiries from Ontario and the Maritime Provinces, particular injuries being caused in strawberry plantations in southern Ontario and in the vicinity of Cumberland County, Nova Scotia.

The San Jose scale has been found on orchard trees at Spence's Bridge, B. C. This insect was believed to have been eradicated. The importance of this item lies in the fact that this is the only point in British Columbia where this insect is known to occur.

Owing to the great prevalence of the fungous disease, Entomophthora macrospora, of the apple sucker, Psyllia mali, this insect is not nearly so abundant in Nova Scotia this season, although its distribution has been somewhat enlarged.

The spring cankerworm is occurring in outbreak form on apple and elm trees in many sections of southern Ontario.

Regionally throughout western Ontario the flight of June beetles has thus far been light.

In summarizing the late autumn and winter mortality of the European corn borer at various points throughout the entire infested area in Ontario, but 6.4 per cent of the larvae were found to have died. The reduction of the larvae in the field by birds this past winter in ordinary crop refuse was of no practical importance in control. This indicates clearly that these natural control factors can not be depended upon to assist materially in the control of the pest. The excellent results following early fall and careful spring plowing in reducing the number of larvae have been strikingly illustrated this spring.

Hessian fly injury is generally light throughout western Ontario.

Grasshoppers are reported in severe outbreak form in southern Saskatchewan.

Wireworms are occurring in local outbreaks in Saskatchewan and Manitoba and much damage to wheat and corn has been caused.

The lesser clover-leaf weevil appears to be more abundant than the clover-leaf weevil this year in southern Ontario and is decidedly more injurious.

The elm bark-louse has again made its appearance in considerable numbers in the vicinity of Ottawa. This insect is one of the worst enemies of the elm in Canada.



CEREAL AND FORAGE-CROP INSECTS

GENERAL FEEDERS

CUTWORMS (Noctuidae)

- Massachusetts A. I. Bourne (June 23): Cutworms are still doing some damage on the Cape, where they are much more destructive on truck crops than usual this season.
- Michigan R.H.Pettit (May 28): I received today some specimens of cutworms from Benzie County, in the northwestern part of the Lower Peninsula, with statement that fifty-two were taken from around one sweet-clover root which was plowed up in making ready for a cornfield. Last year the same kind of cutworm seemed to be attacking the roots of sweet clover.
- Wisconsin S.B.Fracker (June 15): Moderate damage reported to corn, tomatoes, and other crops in Rock, Dane, Grant, Vernon, Pepin, Monroe, Wood, Portage, and Lincoln Counties. Reported absent in Burnett County up to May 15 at least.
- South Dakota A.L. Ford and H.C.Severin (June 8): Cutworms are seriously damaging young corn in many places in the southeastern part of the State. Many farmers have been forced to replant. In no case has there been injury to corn on fall-plowed land.
- Nebraska M.H.Swenk (May 15-June 15): Cutworms, despite the cool, wet spring over most of the State, have not been normally abundant or destructive. During the third week in May, however, heavy flights of the moths of the western army cutworm (Euxoa auxillaris), resulting from an abundance of its cutworms the preceding month, was taking place in Arthur County.
- Idaho Don B. Whelan (May 24): Cutworms ate all green growth on 5 acres of alfalfa at Blackfoot. Control was obtained by the use of poisoned-bran mash.

WIREWORMS (Elateridae)

- Ohio F. W. Poos (June 7): We have noticed Limonius sp. occasionally on our experimental plot at Sandusky this year, but to date no damage to the corn is apparent.
- Indiana J. J. Davis (June 19): Report of injury to corn at Reynolds on June 15, also report on June 16 at Columbus.
- Illinois W. P. Flint (June 19): Unknown species of wireworms have been abundant and destructive. Several counties in the central part

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of the State report 5 to 10 per cent of the cornfields damaged. Individual fields where actual counts were taken show 5 to 50 per cent of the corn killed.

Montana Stewart Lockwood (June 1): A farmer at Roberts sent in some larvae he found destroying his field of wheat. He said that a large part of the field was destroyed.

Idaho Claude Wakeland (May 26): Adults are numerous at this time in the southwestern part of the State and females are ovipositing freely. This pest is becoming increasingly abundant from year to year and gradually spreading to irrigated land that has remained more or less free for years. It is impossible to raise corn or potatoes in certain restricted localities. Wireworms are a pest of major importance to growers of potatoes, lettuce, and corn.

Washington M. C. Lane (June 4): Under separate cover I am sending by this mail a package containing five larvae of the genus *Pheletes* collected by me at Toppenish, Wash., June 1. These larvae are from the same nursery as those reported by Mr. Newcomer about May 17 and are without doubt the wireworm that is doing the damage. My own observations and collections lead me to believe that this is the wireworm that is doing all the damage to crops under irrigation in the Yakima Valley and several other irrigated sections in the State besides. The damage in the nursery was mostly in blocks of seedlings on land that had been in potatoes for several years previous. I will also include a mounted specimen sent me by Mr. Newcomer (*Pheletes occidentalis* Cand.) which he states was picked up dead in the nursery where the larvae were found. It may or may not be the adult responsible, but I wish to have this adult determined and returned to me for future comparison. In outdoor cages here I have several larvae of the same lot as those being sent, and hope to procure adults before the summer is over. If I succeed I will send the adults in for determination also.

GRASSHOPPERS (*Acrididae* et al.)

Wisconsin S. B. Fracker (June 15): Grasshoppers, most^{ly} *Melanoplus atlanis* are slightly worse than last year at this date in Oneida, Florence, and Forest Counties. Not as bad in Price County. In pastures only so far. Reported present in Vernon County by County Agent.

North Dakota R. L. Webster (June 12): Some rye fields in McHenry and Bottineau Counties are reported as having been plowed under because of damage by young hoppers. They are increasing in numbers.

South Dakota A. L. Ford and H. C. Severin (June 8): According to the numbers of eggs hatching during the last of May, trouble from *Melanoplus bivittatus* Say, is expected in the alfalfa seed-growing section, Fall River, Custer, Pennington, Meade, Butte, and possibly some in

The first of these is the fact that the...

The second is the fact that the...

The third is the fact that the...

The fourth is the fact that the...

The fifth is the fact that the...

The sixth is the fact that the...

Lawrence Counties. To date the only known pending outbreak of Melanoplus differentialis is in Bon Homme County at the mouth of Dry Schoteau Creek. In this locality the eggs are numerous.

- Nebraska M.H.Swenk (May 15-June 15): Grasshoppers, chiefly Melanoplus bivittatus, were found to be hatching out abundantly in the irrigated district of the North Platte Valley during the first week in June, promising continued injuries in some localities. About half of them had emerged from the eggs by June 8.
- Kansas J. W. McColloch (June 21): Grasshoppers are appearing in large numbers in all fields in Ellis County.
- Texas R. R. Reppert (June 4): From Fort Worth to San Antonio, north and west, the country is suffering the most serious outbreak of grasshoppers since 1901 and great difficulty is experienced in obtaining poison. Species differentialis predominates.
- M. C. Tanquary (June 8): Very serious grasshopper outbreaks are occurring in about a dozen western and mid-western Texas points. (June 15): Numerous reports from about a dozen counties in central and western Texas indicate more serious grasshopper outbreaks than have occurred in this State for several years. Poisoned-bran mash is being used with success.
- Wyoming Stewart Lockwood (June 1): Melanoplus bivittatus are now about two-thirds hatched and are just starting to work on the edges of crops in Park County. The infestation promises to be very heavy in corn and alfalfa.
- Utah H.J.Pack (May 26): The black cricket, Anabrus simplex, threatens much greater damage this year than was done last year. These crickets occur in menacing numbers in the southern part of the State, where they are already in fields of grain and alfalfa. There are a few in Cache County and considerable numbers are reported in Uinta County.
- Idaho Don B. Whelan (May 24): Grasshoppers are more abundant in Bingham County than last year or during preceding years. A very extensive and severe outbreak in 1922 required a well-organized and long-conducted poisoning campaign. About 10 per cent of the eggs are now hatched. Blister-beetle larvae, Epicauta maculata, are numerous. (May 25): Anabrus simplex damaged one end of a wheat field at Fairfield and then moved on to a pasture. They are much more abundant than last year.
- Oregon C. M. Packard (June 9): In Klamath County hoppers are still small, but very abundant in practically all cultivated valleys. Systematic poisoning is being carried on under direction of the



County Agent, with excellent results in most localities. If the outbreak had not been vigorously fought extensive and serious damage would have taken place.

California C. M. Packard (June 7): At the Klamath Irrigation Project hoppers are still small and in isolated bands, but they are spreading. Several species are present but not determinable in the young stages now present. Extensive poisoning is now in progress with varying success from excellent to poor, on the whole good. An area of 50,000 acres is covered by a spotted infestation.

California Weekly News Letter, Vol. 5, No. 12 (June 16): Advice received by the California Department of Agriculture from Horticultural Commissioner for Modoc County indicate heavy infestations of grasshoppers both in Modoc and Siskiyou.

In the Lake Lake section of Modoc and Siskiyou grasshoppers are menacing twenty thousand acres of grain. Several thousand acres of "reseeded land" in this section are literally covered with small hoppers. The U. S. Reclamation Service has given \$5,000 to combat the grasshoppers and every cropper is devoting practically all time to scattering poison.

During favorable weather for poisoning as much as 10,000 pounds of poison bran mash is scattered daily. The Horticultural Commissioner for Modoc County is putting on crews to assist the croppers. Ingredients for mixing the poison are being bought in carload lots and everything possible is being done to relieve the situation.

APHIDS (Aphididae)

Illinois W. P. Flint (June 19): The English grain aphid, Macrosiphum granarium, is generally abundant in wheat throughout the State but; not in numbers sufficient to cause injury to the grain.

Indiana J. J. Davis (June 15): The grain aphid, Macrosiphum granarium, has been abundant the past two weeks, apparently with no appreciable injury, however.

Texas O. G. Babcock (May 9): For the first time in three years the weather has been very favorable for the development of aphids in general in West Texas within a 100-mile radius of Sonora. The spring was late and cool, with an abundance of moisture. Weeds and shrubs of all kinds have made wonderful growths, exceeding normal growth by 100 per cent in many cases. Aphids upon a rare but wild Gilia, on ~~perstemonas~~ domestic flowers, plum trees, and roses and other plants are or were common. No predacious nor parasitic enemies to mention have been present until now, when hot and dry weather is setting in. The aphid enemies are now becoming very numerous. Grain aphids are also present upon volunteer barley.

WHITE GRUBS (Phyllophaga spp.)

New York L. J. W. Jones (June 15): May beetle larvae about 1/4 inch long,

2 to 5 per square foot, where observed. Observation was not general, and these might have hatched from an egg cluster. Believed to be increasing (20 per cent more than last month) at Bainbridge, in Chenango County.

Roy Latham (June 20): Swarms of June beetles have been the heaviest ever observed at Orient, in Suffolk County.

Wisconsin S. B. Fracker (June 15): Adults are riddling oak and poplar leaves from Madison to Platteville, in the southwestern part of the State. In Vilas County both larvae and adults are present.

Illinois C. C. Compton (April 30): Adults of Phyllophaga fusca Free. are beginning to appear at Aurora in moderate numbers.

W. P. Flint (June 19): There was a heavy flight of June beetle adults during the latter part of May and the first of June. Many oaks in scattered stands of trees were nearly defoliated.

South Dakota A. L. Ford and H. C. Severin (June 8): Adults are more numerous in the southeastern part of the State than for years, according to observations and reports. This indicates that this section will suffer during the growing season of 1924.

Idaho Don B. Whelan (May 24): Adults are reported numerous but no injury is reported.

WHEAT

CHINCH BUG (Elissus leucopterus Say)

Ohio Herbert Osborn (June 2): Occasional bugs have been taken in sweeping in meadow land at Columbus. No serious infestations have been observed so far.

Indiana J. J. Davis (June 15): On June 14 the first report of bugs migrating from grain to corn was received from Jasonville, in Greene County. Bugs are abundant in small grain fields. Severe outbreak is anticipated.

Illinois W.P. Flint (June 19): Hatching of the chinch bug eggs was greatly delayed by the cool wet weather. The first young were found in the field June 7. Rains have had some effect in lessening the number of eggs laid, but have not made any material decrease in the chinch bug numbers. There will apparently be a very heavy infestation covering more than three-fourths of the State. The degree of infestation varies locally, being most severe throughout central and south-central sections.

Iowa Fred D. Butcher (June 4): On May 30 adults were present in wheat fields in Lee County, 1 to 12 per stool, and mating. No eggs were found.

South Dakota A. L. Ford and H. C. Severin (June 8): Charles Mix, Bon Homme, Douglas, and Hutchinson Counties wintered many bugs successfully. Chances are good for trouble in these counties. Recent heavy rains in this section undoubtedly have relieved the situation to some extent.

Nebraska M. H. Swenk (June 15): The chinch bug began appearing about May 20 in abundance in the wheat fields of southern Pawnee, Gage, and Jefferson Counties and in unimportant numbers in the wheat fields north of these counties to the Platte River. During the week from May 17 to May 24 there were sufficiently heavy rains in this region to give something of a setback to the bugs, but they are still very abundant in some fields. Even heavier rains occurred in the region farther west that was found to be more or less infested last fall, from Jefferson to Furnas Counties, and no reports of great abundance of chinch bugs in that area have been received this spring.

Kansas J. W. McColloch (June 16): Owing to backward weather conditions, hatching has just begun in the northern half of the State. Chinch bugs are more abundant than in an average year and less abundant than last month, because of abnormal climatic conditions. Fungus, egg parasites, and ladybeetles are present. As many as 15 or 20 diseased bugs to the square foot occur in small grain, and from 10 to 15 per cent of the eggs are parasitized.

Texas M. C. Tanquary (June 15): Chinch bugs have been reported as occurring in destructive numbers in Denton and Houston Counties. They have been noted as being present in small patches of sweet corn in Brazos County.

HESSIAN FLY (Phytophaga destructor Say)

Iowa Fred D. Butcher (May 28): September 20 seeding is heavily infested, from 80 to 90 per cent, late seeding, after October 5, from 30 to 50 per cent, from spring flight within a radius of 1 to 2 miles in Mills County. (June 9): This pest is well distributed over Monroe County, and the spring injury will no doubt be severe. Straws are falling badly now.

Nebraska M. H. Swenk (May 15- June 15): In spite of the dry summer and fall of 1922, the fall brood appeared in strength in the early-seeded winter wheat in some parts of eastern Nebraska, and this strength was greatly augmented by the heavy spring brood of 1923, so that the pest is now so abundant as to cause some serious losses in the present crop, and form a menace for the new crop to be seeded this fall. Weather conditions this spring have been unusually favorable for the Hessian fly. The insect is well distributed over much of southeastern Nebraska, being locally

injurious here and there as far west as Furnas County, but the most serious injury is practically confined to the block of four counties bordering the Missouri and south of the Platte, Cass, Otoe, Nemaha, and Richardson, with the adjacent counties of Johnson and Pawnee. In Cass County the infested fields are mostly the early-seeded ones, and these show frequently from .75 per cent to practically 100 per cent of the stems affected, causing an estimated average local damage to the crop of from 5 per cent to as high as 20 per cent in the more eastern townships. Otoe County is also seriously infested, especially the eastern portion, only slightly less so than Cass County, and the same may also be said of Nemaha County. In Richardson, Pawnee, and Johnson Counties the injury is less intense, being the worst in Richardson County. Northern Butler County has considerable infestation also. The fly larvae were beginning to change into "flaxseeds" on May 21, which marked the beginning of the end of active injury. A considerable number of the very badly injured fields were plowed up and planted to corn during the last week in May and the first week in June.

WHEAT JOINTWORM (Isosoma tritici Fitch)

- Illinois W. P. Flint (June 19): This worm is present in nearly all fields, and in many fields where examinations have been made more than 25 per cent of the straws are infested.
- Missouri O. C. McBride (June 22): In Greene County 12 $\frac{1}{2}$ per cent of the wheat in several fields is injured with heads blasted and straw lodging. Grubs are nearly full-grown. In Mississippi County there are about 2 per cent injury and 5 per cent in Phelps in many fields.

A SAWFLY (Dolerus sp.)

- Indiana W. A. Ostrander (June 14): Sawfly larvae are damaging wheat in the northern half of Elkhart County, near the Michigan State line. Larvae are eating foliage and green wheat heads, doing considerable damage.

FALSE WIREWORMS (Eleodes hispilabbis, E.letcheri
and E. carbonaria)

- Idaho Claude Wakeland (May 20): These are pests of major importance to the wheat raisers on the dry-land farms of eastern Idaho. Usual general injury caused in many fields with an occasional field that is severely injured and almost entirely or completely killed out.

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

- Louisiana T. H. Jones: Complaints of injury by larvae of the first generation have been received from West Feliciana, Avoyelles, St. Helena, East Baton Rouge, and East Feliciana Parishes; larvae, pupae, and adult from St. Helena Parish. It is interesting to note that the complaints of injury come from a section of the State where the sugar-cane moth stalk-borer has caused severe injury to corn during the past few years. Moths from material sent in began issuing in our insectary on June 4.

Arizona V. L. Wildermuth (June 6): Report of Diatraea, probably D. lineolata (although it may be zeacolella), received from Tucson, damaging corn 33-1/3 per cent.

STALK BORER (Papaipema nitela Guen.)

Connecticut M. P. Zappe (June 21): Very young corn, less than 3 inches high, is badly infested at Hamden. This borer seems to be more abundant than in an average year.

BILLBUGS (Sphenophorus spp.)

Indiana J. J. Davis (June 15): On June 7 Sphenophorus parvulus was reported damaging corn in low spots of field 5 miles northeast of Mulberry. This field was in timothy last year. (June 16): A beetle, probably Sphenophorus ochreus, is about 1/2 inch long and of a grayish color with a faint stripe. It has a bill about 1/4 inch long with which it punctures the young plant. It has destroyed about 500 acres of corn at DeMotte in the Kanbaba marsh land, and the prospects are that it will get that much more.

SEED-CORN MAGGOT (Hylemyia cilicrura Rond.)

New York C. R. Crosby (June 8): Corn infested with Phorbia fusiceps was received from Cayuga County. In many cases the farmers have had to replant the field.

Illinois Chas. C. Compton (May 26): The seed-corn maggot has been more troublesome this spring than usual in the northern part of the State, necessitating replanting in several cases.

PALE-STRIPED FLEA-BEETLE (Systema taeniata Melsh.)

Indiana J. J. Davis (June 15): On June 14 the pale-striped flea-beetle was reported as practically destroying 20 acres of corn and moving at the present time to an adjoining field near West Point, 10 miles southwest of LaFayette. On June 15 the same species was destroying 10 acres of corn at Goodland.

Illinois W. P. Flint (June 19): Pale-striped flea-beetle larvae, var. blanda, have been very abundant throughout central and northern Illinois and have caused considerable damage to corn during the first two weeks after planting. A number of cases have been reported where the adults were all of this species.

ALFALFA AND CLOVER

ALFALFA WEEVIL (Phytonomus posticus Gyll.)

Idaho Don B. Whelan (May 24): Larvae are quite noticeably present in terminal buds of alfalfa at Blackfoot and Aberdeen. Abundance is greater than in 1922.

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Claude Wakeland (May 25): Activity of adults is extending over a long period of time. The first larvae were observed in the field in southwestern Idaho May 2, the first pupae May 22. Larvae are abundant in fields, also eggs, and females yet contain large numbers of eggs to be deposited. Communities severely affected in 1922 are in general less infested, but severe injury is occurring or will occur in communities where not noticed last year. Bathyplectes curculionis occurs generally but in small numbers around Caldwell and Parma.

ALFALFA CATERPILLAR (Eurytus eurytheme Boisd.)

Idaho Don B. Whelan (June 8): Damage at Wendall is slight, about 1 per cent. Quite a percentage of terminal leaves are eaten. Injury resembles that of alfalfa weevil when not abundant.

FALSE CHINCH BUG (Nysius ericae Schill.)

Minnesota A. G. Ruggles (June 7): The false chinch bug was discovered doing considerable damage in alfalfa fields at Milaca.

CLOVER-LEAF WEEVIL (Hypera punctata Fab.)

Idaho Don B. Whelan and Claude Wakeland (May 20): The steady and consistent increase of this insect while slow would suggest that it may become a pest of major importance at some future time. It has become more abundant each year during the last three years. Several reports of injury to alfalfa and clover have been received this season. Attention is called to it mostly by farmers taking injury of it to be due to the alfalfa weevil. Locality, in Boise-Payette Valley.

LESSER CLOVER-LEAF WEEVIL (Phytonomus nigrirostris Fab.)

Ohio T. H. Parks (May 31): These larvae are now common in the embryo heads and buds of red clover at Columbus, also beneath the leaf stipules. Some are already nearly full-grown. Prospects are good for interference of normal blossoming due to the presence of the larvae. This has been the worst insect pest of red clover for several years in western and central counties. (June 23): The pest is present at Columbus in the usual numbers, but good growing weather enabled the clover to outgrow its damage. After watching this pest for four years, we notice parasitism increasing and beginning to have its effect upon the host.

RYE

SORGHUM WEBWORM (Celama sorghiella Riley)

Indiana J. J. Davis (June 16): We have received specimens of what certainly must be Celama sorghiella, attacking the developing grains in the heads of Rosen rye at Newport. This is the first record we have

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population of the country has increased
very rapidly since the year 1850. This
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ever obtained on this insect attacking rye; in fact I do not recall its ever having been found injuring this crop before. Our correspondent has advised us that it attacks nothing except Rosen rye, which is a new variety for that section.

FRUIT INSECTS

APPLE

GREEN APPLE APHID (Aphis pomi DeG.)

- Massachusetts A. I. Bourne (June 23): Aphids were about normally abundant the last of May and the first of June in unsprayed orchards, but were held in absolute control in the blocks where careful spraying was done. Reports indicate that aphid occurrence is much less than is normally the case and they are being taken care of very well by the Coccinellids.
- Connecticut W. H. Darrow (June): Ladybug larvae and another small downy covered worm are apparently exterminating the aphids in certain orchards.
- C. D. Clark (June 15): This insect is reported from Wilton and Greenwich, abundance as compared with an average year being less. In Wilton, larvae of ladybeetles are abundant.
- New York C. R. Crosby and assistants: Infestation was rather severe early in the month, but heavy rains have reduced the outbreak to a negligible factor for this season.
- Pennsylvania S. W. Frost (June 8): The green apple aphid has not been found serious in Adams County this season. It has become more numerous during the past few weeks, however.
- Ohio E. W. Mendenhall (June 12): Abundance of green leaf aphids or plant-lice is far greater than last year on apple trees in this section and they seem to be hard to control. There are a number of commercial apple orchards in this locality.

ROSY APPLE APHID (Amuraphis roseae Baker)

- Connecticut W. E. Britton and Philip Garman (June 12): This insect is not numerous enough to be serious. I believe it is generally much less abundant in this State than last year. It has been reported from Greenwich, Deep River, and Haddam and is more abundant than in an average year in this locality.
- New York C. R. Crosby and assistants: The rosy apple aphid is over the apple-growing section, doing serious damage in Oswego and parts of Orleans Counties.

- Pennsylvania S. W. Frost (June 8): The rosy apple aphids were very abundant in Adams and Franklin Counties this summer. The winged forms are appearing in large numbers and the aphids are migrating.
- Ohio E. W. Mendenhall (June 16): Rosy apple aphids are very bad in the commercial and farm orchards in Delaware County. "Black-leaf '40" is being used, but they seem hard to control. The infestation seems worse than usual this year.
- Indiana H. F. Dietz (June 22): Unusually abundant this year.
- Illinois W. P. Flint (June 19): The rosy apple aphid is very abundant throughout the central and southern part of Illinois. Infestation is decreasing at the present time owing to attack of syrphus flies, ladybugs, and other insect enemies.

OODLING MOTH (Carpocapsa pomonella L.)

- New York C. R. Crosby and assistants: The first eggs of the codling moth began to appear in orchards on June 5, and 6, in Orleans County. The weather has not been favorable for codling moth development. Very few moths have emerged to date. Observations at Sodus, Wayne County, indicate that codling moths are all in the larva stage. In the southern part of the county pupae and adults were found in abundance. The adults were just emerging from the pupa cases. No eggs were found.
- Virginia L. A. Stearns (June 21): The first cocooning of first-brood larvae occurred June 8, and the first pupation, June 11. Full-grown worms have since been found leaving the fruit in rapidly increasing numbers.
- Illinois W. P. Flint (May 18): The first adults of the codling moth emerged at Carbondale on May 7. Judging from the pupation records at other points in the State, eggs of the first brood will be hatching from May 20 in southern Illinois to about June 10, in the northern part of the State. (June 19): This moth is present in more than average numbers. Adults are still continuing to emerge from overwintering larvae.
- Idaho Claude Wakeland (May 28): First emergence was observed at Parma May 18, the first eggs in the laboratory May 26.
- Washington E. J. Newcomer (June 18): Owing to the cool rainy weather the codling moth is not nearly as numerous as last season. This, together with the unusual efforts being made by the growers to fight it, should result in a very clean crop of fruit.



FRUIT-TREE LEAF-ROLLER (Cacoecia argyrospila Walker)

New York

C. R. Crosby and assistants: In Orleans County, leaf-rollers have begun to pupate. They are very plentiful throughout the county, and are doing considerable damage in some orchards. In Monroe County this insect is common and is doing considerable injury. Leaf-rollers are about all hatched, and are rather abundant throughout the entire county. They are abundant on apples in many orchards. Well-sprayed orchards do not have as many as those not so well taken care of. It begins to appear that more aggressive measures may be necessary next year. This insect is commonly found in Wyoming County in neglected and unsprayed orchards. In Wayne County it is prevalent over the whole county, and abundant where no pre-blossom spray was applied. In most orchards in Ontario County this insect can be found, but it is not bad where the spraying has been good. In Chautauqua County, it is frequently found but is not abundant enough to be destructive. It is very general in distribution and causing considerable damage in Oswego County. It is found generally in Genesee County, damage being from 1 to 10 per cent. In Dutchess County, it is rather prevalent, especially in the orchards which received no pre-blossom spray; 2 per cent injury, generally distributed.

Missouri

L. Haseman (June 5): This insect is not abundant in any one section, though it is scattered over the State and more or less serious where found.

APPLE AND THORN SKELETONIZER (Hemerophila pariana Clerck)

Massachusetts

A. I. Bourne (June 23): A few specimens of this pest were sent in on June 14, from the town of Sheffield. At the time of arrival one of the specimens had pupated.

Connecticut

J. A. Menter (June 22): The first brood has matured in Mansfield, and is more abundant than in an average year.

F. A. Bartlett (June 23): Reported from Fairfield. Abundance apparently more than a year ago, and less than in 1922.

New York

C. R. Crosby and assistants: Larvae are now working in small numbers on some of the trees. It is expected that the calyx application will clean up this pest in Dutchess County. In several parts of Rockland County this pest was observed in small numbers the past week.

M. D. Leonard (April 15): Roy Latham reports that moths were out in large numbers on this date. A few were seen the last few days of March at Orient, Suffolk County. They were found to winter over in buildings and under loose bark. (June 22): The Albany County agent, reports considerable skeletonizing at present at Ravena.



E. P. Felt (June 22): There is severe skeletonizing of leaves at present in several orchards.

BUD WORM (Imetocera ocellana Schif.)

- New York C. R. Crosby and assistants: Fairly abundant and serious throughout the apple growing sections especially on young and poorly cared for orchards.
- Minnesota A. G. Ruggles (June 7): The bud worm was found doing considerable damage at Orchard Gardens. This is the first time this insect has been discovered in numbers in the State. A closely related form of Stenoma albidella was also found along with this species.

GREEN FRUITWORM (Xylina antennata Walker)

- New York C. R. Crosby and assistants: In Oswego County this insect is reported as doing considerable damage in two orchards with 2 per cent injury. In Dutchess County it is generally distributed. It is fairly serious in some neglected orchards in Genesee County, with 1 to 5 per cent injury. Two or three serious infestations of the green fruit worm occurred in Columbia County, one of these being in fact the worst infestation ever seen. The insect is doing an unusual amount of damage here this year in general. In Ontario County it is rather numerous, especially in orchards not well sprayed. Not plentiful in Orleans County, but a few are to be found in some orchards. In Ulster County this insect is general but not common or serious. In Monroe County it is present but not abundant, and in Chautauqua County it is found only occasionally in various parts of the county.

TENT CATERPILLAR (Malacosoma americana Fab.)

- Massachusetts A. I. Bourne (June 23): As predicted earlier in the season, reports indicate that tent caterpillars were abnormally abundant and when neglected did considerable damage in Franklin, Worcester, and Barnstable Counties, and in fact throughout the State. In many places it is recorded as the only apple pest of importance this season.
- Connecticut F. A. Barlett (June 23): This insect is reported from Fairfield, as being more abundant than last year.
- I. W. Davis : This pest is reported from Windham County, increased in abundance as compared with average year.
- W. E. Britton (June 23): The tent caterpillar is particularly abundant in Litchfield County, but abundant all over the State.



- New York C. R. Crosby and assistants: Tent caterpillars are quite numerous in all parts of Oswego County. They are found in Ontario County in most orchards that have not been sprayed, not serious in Orleans County; also observed on roadside trees, in Genesee County.
- J. T. M. Forbes (June 2): Tent caterpillars are coming into the last stage. This is to be expected early in June, but is in direct contrast with the belated development of most other insects this season.
- Leland J. W. Jones (June 10): Owing to unfavorable and cold weather last month, the report was not exact; this pest is increasing over former years at Bainbridge. Little is to be done to control it.
- Pennsylvania S. W. Frost (June 8): The apple tent caterpillar is abundant on neglected apple, plum, and cherry trees in Adams County.
- Delaware C. O. Houghton (May 17): Caterpillars are now migrating to find suitable places for spinning up. Serious injury has been done in many cases, trees being wholly defoliated.
- Wisconsin S. B. Fracker (June 15): This insect is reported in Columbia, Grant, and Marathon Counties; and has been personally observed in Dane, Rock, and Walworth Counties.
- Minnesota A. G. Ruggles (June 7): The tent caterpillar was very abundant in Orchard Gardens. Ordinarily we see very little of this insect in Minnesota. In this part of the State the orchards have not been well taken care of and the insect seems to be on the increase.

SPRING CANKERWORM (Paleacrita vernata Peck)

- New York C. R. Crosby and assistants: This insect is quite generally prevalent over the western New York apple growing section. It was so serious this year in Genesee County that a spray ring has been formed to fight this pest. It is estimated that the trees in the infested area are 75 per cent defoliated.
- Wisconsin S. B. Fracker (June 15): The spring cankerworm is less injurious than in 1921 and 1922 in southeastern counties, but worse from Madison to Spring Green.
- C. L. Fluke (June 22): The spring cankerworms have appeared in the southern part of Wisconsin in great numbers. At this date the damage is nearly over.
- Minnesota A. G. Ruggles (June 7): The spring cankerworms seem to be as bad this year as ever in many sections of the State.

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Iowa Fred D. Butcher (June 1): Cankerworms are stripping elms and unsprayed apple orchards in different parts of the county.

FALL CANKERWORM (Alsophila pometaria Harris)

New York C. R. Crosby and assistants: In Orleans County, the fall cankerworms are working in orchards in the southern part of the county, while in Wayne County, they are unusually abundant in three neglected orchards.

Wisconsin C. L. Fluke (June 22): The fall cankerworms have appeared in the southern part of Wisconsin in great numbers. At this date the damage is nearly over.

Minnesota A. G. Ruggles (June 7): The fall cankerworms seem to be as bad this year as ever in many sections of the State.

APPLE RED-BUG (Heterocordylus malinus Reut.)

Massachusetts A. I. Bourne (June 23): The apple red-bug is reported as being fairly abundant in Pittsfield, in Berkshire County, in spite of rather careful spraying. In the College orchard the red-bug is found to be very generally distributed and troublesome. It should be nearly through its work at this time, however, for the season.

Connecticut W. H. Darrow (June): This insect is reported as attacking the apple throughout the entire State of Connecticut.

New York C. R. Crosby and assistants: The apple red-bug has been observed in moderate numbers in numerous orchards in Dutchess County, but only a few have been found in Ontario County, and it is very scarce in Ulster County.

FALSE APPLE RED-BUG (Lygidea mendax Reut.)

Connecticut J. A. Manter (June 22): This insect is reported as attacking the apple in Mansfield. It is less abundant than in an average year for the last few years.

New York C. R. Crosby and assistants: In Ontario County the false apple red-bug has been seen in nearly every section. Although a few orchards have been found where they were plentiful, they have been hatching rapidly during the past week. In Wyoming County they were first found on May 31, one orchard being seriously infested. In Monroe County they were not abundant but were present. In Orleans County, nymphs have reached the third and fourth instars, and are abundant in a few orchards, while in Ulster County, the red-bugs are in the third stage, and

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abundant in but three locations, none having been seen now for 2 weeks. In Genesee County to the present time, these insects have been found in the third instar, and several orchards required control measures. In Nassau County they were found in one orchard this past week, while in Onondaga County they began hatching in but one orchard where they are very numerous. In Wayne County, the nymphs are now in the fourth stage, while at Dutchess County they were observed in moderate numbers in numerous orchards.

APPLE LEAFHOPPER (Empoasca mali LeB. et al.)

Massachusetts A. I. Bourne (June 23): The early hoppers of the apple were very bad indeed in many orchards but were readily handled by the spraying and dusting campaigns.

New York C. R. Crosby and assistants: In Ontario County, apple leafhoppers are abundant all over, while in Orleans County, they are abundant throughout the county and are now changing to adults. In Ulster County they were found in but 2 orchards in plentiful numbers. They are abundant in Monroe County, but not yet severe. The majority of these insects have reached the adult stage in Genesee County, and are found generally in younger orchards. In Wyoming County they are present particularly in the younger orchards but not serious, causing some injury in a few young plantings. In Wayne County they are very abundant over the county, especially in the northern half, and have become quite serious in some orchards. Most damage has been done on younger trees. In a few individual cases a special spray was recommended. They are hatching in large numbers.

Wisconsin Van W. Cass (June 10): This insect is reported as "bad" in Madison.

Connecticut Philip Garman (June 21): The rose leafhopper has been reported as attacking the apple at Hamden, and more abundant than in an average year.

Pennsylvania S. W. Frost (June 8): The rose leafhopper is exceedingly abundant on apple in some orchards in Adams County. The characteristic white stippling on the leaves is already very pronounced. A small percentage have transformed, but the greater proportion are still nymphs.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Massachusetts A. I. Bourne (June 23): The San Jose scale seems to be increasing in abundance.

New York C. R. Crosby and assistants: The young of the San Jose scale appeared on June 11, and were found in plentiful numbers in but

a few orchards in Orleans County, while in Genesee County they were found generally serious in Bergen. They are slightly more common than last year in Monroe County.

- North Carolina R. W. Leiby: This insect has been increasingly injurious in the commercial sandhill section on peach trees during the past two years. Trees that received two applications of lime-sulphur at standard strength during the same winter continue to show heavy infestation. An unusual number of parasitic emergence holes are now prevalent.
- Georgia Oliver I. Snapp (June 20): The general scale infestation in the Georgia Peach Belt is still moderately heavy. Liquid lime-sulphur has apparently given only fairly good results in controlling scales. The control is excellent in experimental orchards where lubricating-oil emulsions were used.
- Wisconsin S. B. Fracker (June 1): Extensive spraying campaigns at Whitewater and Rochester seem to have nearly eliminated the San Jose scale. Infestation is slight at the remaining three or four infestation centers. Spread in a park at LaCrosse caused a new thorough treatment.

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

- Massachusetts A. I. Bourne (June 23): The oyster-shell scale young made their appearance about the 30th of May to the first of June. We find there was considerable evidence of winterkilling, so that the pest was much reduced in numbers, particularly in this immediate region (Amherst) and is present in about normal numbers.
- New York C. R. Crosby and assistants: This scale was quite prevalent throughout Ontario County. In Genesee County no heavy infestation was found, while in Orleans County it was not bad except in unsprayed orchards.
- Indiana J. J. Davis (June 15): The banded oyster-shell scale began hatching at La Fayette on June 3, and by June 10 they had all hatched; in fact most of them hatched within three or four days after the first young were noticed.
- Wisconsin U. C. Boss (May 25): This insect has been reported as attacking the apple at Oshkosh.

HALF-WINGED GEOMETER (Phigalia titea Cramer)

- New York C. R. Crosby and assistants: In Rockland County the half-winged geometer is still very plentiful, feeding slightly on the young trees. Caterpillars of several sizes are common on young apple



trees throughout the county. They attack the fruit as well as the foliage, eating off the skin of the young apples, at Spring Valley.

APPLE FLEA-WEEVIL (Orchestes pallicornis Say)

Pennsylvania S. W. Frost and Anthony Berg (June 8): The apple flea-weevil has been found mining the leaves of the apple at Morgantown, W. Va., This insect was present in considerable numbers.

FLEA-BEETLES (Systema taeniata Say and S. hudsonias Forst.)

Pennsylvania S. W. Frost and E. M. Craighead (June 8): Two flea-beetles have been found serious on apple seedlings in Adams County; Systema taeniata Say and Systema hudsonias Forst. The former was by far the more numerous.

IMBRICATED SNOUT-BEETLE (Epicaerus imbricatus Say)

Illinois W. P. Flint (June 19): Imbricated snout-beetles have been sent in with reports of damage to corn, strawberries, soy beans, and apple buds. This insect has been reported from Jersey, Green, Henry, Marshall, Putnam, Mercer, and Johnson Counties. Beetles have been sent in from other points in southern, central, and northern Illinois.

Nebraska M. H. Swenk (June 15): In eastern Otoe County a young orchard chiefly of apple trees was largely defoliated during the second week in June by the imbricated snout-beetle.

NEW YORK WEEVIL (Ithycerus noveboracensis Forst.)

Illinois J. H. Biggar (June 16): This insect cut two-thirds of the twigs off of 20-acres of 2 and 3 year-old trees in Calhoun County.

EUROPEAN RED SPIDER (Paratetranychus pilosus C. & F.)

Massachusetts A. I. Bourne (June 23): Under date of June 18, Mr. E. R. Farrar reports that mites on apple trees and some ornamentals were increasing to a considerable extent, owing to the long period of hot dry weather, so that they were causing a marked shading off in color of foliage. Heavy rains in the vicinity of Lincoln about the 15th or 16th checked this condition to some extent.

New York C. R. Crosby and assistants: This pest is not bad in Orleans County; abundant in several orchards, but not serious to date in Genesee County, while in Ontario County they are found in most orchards and are quite abundant where thorough spraying has not been done. In Chautauqua County some have been found occasionally but not in serious abundance. They are quite prevalent in Dutchess County but no special injury has been reported.

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PEAR

PEAR-LEAF BLISTER-MITE (Eriophyes pyri Pgst.)

- New York C. R. Crosby and assistants: In Ulster County this mite was found common, though serious in but one orchard, while in Monroe County, moderate damage was noted in unsprayed orchard. It has been found quite generally on the water sprouts and suckers in pear orchards, and prevalent generally but only of minor importance in Genesee County. In Oswego County it is quite prevalent in unsprayed orchards throughout the county. It is unusually abundant in Orleans County on pears this year, very bad in general. It has been found in quite a few orchards in Ontario County, and is quite prevalent in one pear block in the nursery at Honeoye Falls.
- Washington A. L. Melander (May 29): In an orchard half way between Steptoe and Cashup, which had apple and pear trees intermixed, the apple leaves were all badly blistered by the blister-mite while one of the pear leaves showed the work of this mite. I believe our western apple blister mite has been identified by Bureau experts as the same species as the pear-leaf blister-mite.

CALIFORNIA PEAR SAWFLY (Gymnonychnus californicus Marlatt)

- Washington A. L. Melander (May 29): Yesterday on driving from Spokane I stopped at an orchard halfway between Steptoe and Cashup and noted pear leaves with circular holes, evidently the work of Gymnonychnus californicus. The young larvae were eating their way around and around in the circular openings. We have no record of this insect in Washington, so I thought you would be interested.

PEAR MIDGE (Contarinia pyrivora Riley)

- New York C. R. Crosby and assistants: 10 to 15 per cent injury was observed in one orchard in Genesee County. One orchard at LeRoy has been found infested with this pest, attacking the Lawrence variety particularly. It was also found at Bethany. In Ulster County they have left the pears and are in the soil. This insect is increasing in importance this year.
- M. D. Leonard (May 29): Young pearsfruits badly infested with larvae were received from P. L. Husted. (April 23): This insect was reported as abundant on this date on Clapp's Favorite at Blauvelt.

PEACH

ORIENTAL FRUIT-MOTH (Laspeyresia molesta Busck)

- Connecticut Philip Garman (June 21): Only a few twigs are infested.

Virginia L. A. Stearns (June 21): For the first time this insect is found in most of the larger commercial orchards in this section; the first brood of worms are now full grown; their feeding has resulted in widespread and serious twig injury, and considerable damage to late ripening varieties of peach is anticipated.

GREEN PEACH APHID (Myzus persicae Sulz.)

New York C. R. Crosby and assistants: The green peach aphid is unusually abundant this year on the growing tips in Orleans County. In Wayne County it has been noticed in various parts of the county, but does not seem to be abundant enough to be serious.

Delaware C. O. Houghton (May 15): This insect was reported attacking peach at Newark, and Bridgeville, and ~~more~~ abundant than in an average year.

CHERRY

CHERRY APHID (Myzus cerasi Fab.)

Massachusetts A. I. Bourne (June 23): The black cherry aphid proves to be very abundant on sweet cherries.

New York C. R. Crosby and assistants: This aphid is abundant in Ontario County on one or two ~~sweet~~ cherry trees, but no complaints have been received. In Orleans County, they were plentiful very early, but largely destroyed by Syrphus maggots and ladybird beetles, while in Ulster County, they were numerous in general, except in five orchards where early aphid sprays were used. In Genesee County they are only found slightly, at LeRoy.

Idaho D. B. Whelan and Claude Wakeland (June 8): Undersides of terminal leaves of cherry at Wendall were covered with aphids. Cherry trees in Boise were observed badly infested with aphids, many winged.

PEAR SLUG (Caliroa cerasi L.)

Idaho Don B. Whelan (May 28): Eggs of the pear slug were abundant on cherry and pear leaves. None observed have hatched yet.

PLUM

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Massachusetts A. I. Bourne (June 23): The curculio is found generally distributed throughout all the blocks, particularly serious on the plums of all varieties, and along the borders of all the apple blocks, especially those in grass. In Bristol County reports indicate that the plum curculio is very abundant

in that section and observers are finding a considerable amount of fruit scarring, the result of their work. Mr. A. R. Jenks of West Acton, in Middlesex County, reports in his region that curculio damage seems to be very severe.

Connecticut W. H. Barrow (June): Some orchards have secured very good control by following up the calyx spray soon with two more applications.

New York C. R. Crosby and assistants: Plum curculio is generally serious over the fruit section of the State. Damage on pears and apples in some cases quite as serious as on plums, Infestations running as high as 40 per cent in Genesee County and 50 to 60 per cent in Dutchess County have been recorded.

Delaware C. O. Houghton (May 15): A moderate amount of injury to various fruits is appearing here and elsewhere in the State.

North Carolina R. W. Leiby: The first curculio secured by jarring peach trees at Aberdeen, March 26, was one day earlier than in 1922. Emergence has been erratic. Prospects are for a light infestation for 1923, owing to severe winter conditions and a comparatively small number going into hibernation last fall because of a successful control campaign waged throughout the season of 1922. The first egg was secured this season in the insectary on April 14, and and the first egg was found in the field on April 19.

Georgia Oliver I. Snapp (June 20): The adults of the first generation began to emerge from the soil June 7, 1923. They were leaving in numbers for 10 days following. It is believed that only the Georgia Bells and Elbertas will be attacked by second-generation larvae this year. It has been found that the newly emerged beetles feed for a period of 10 days or two weeks before egg deposition, and this will give the Hiley, an important commercial variety of peach in Georgia, time to mature and be harvested before being attacked by the second brood. Parasites of C. nenuphar are unusually numerous this year. Triaspis curculionis is the most common parasite in Georgia. Some parasite boxes containing C. nenuphar larvae show parasitism of over 14 per cent.

Wisconsin S. B. Fracker (June 15): The curculio is very bad in places in Dane County, and is also reported from Jackson County, Madison, and Black River Falls. It is more abundant as compared with an average year.

Louisiana T. H. Jones (May 22): The first adults issued today from "drops" collected on April 24 and kept in a jar in a well ventilated insectary.

PLUM APHID (Hysteroneura setariae Thos.)

Massachusetts A. I. Bourne (June 23): The plum aphid is present in considerable numbers, particularly on a few of our Burbank trees.

as O. G. Babcock (May 9): Many complaints have come in regarding the black plum aphid.

Mexico W. E. Emery (May 28): These aphids are doing quite a bit of damage, causing the plums to turn yellow and fall.

RASPBERRY

A WEBWORM (Crambus sp.)

York C. R. Crosby (June 4): The larvae eat the smaller shoots off near the surface but do not seem to burrow very deeply. The raspberry plants were set out in a field plowed this spring. It was an old meadow.

ROSE SCALE (Aulacaspis rosae Bouche)

Indiana J. J. Davis (June 20): This scale is very abundant in many sections of southern Indiana, in many cases being largely responsible for the death of shoots before fruit matures.

RASPBERRY FRUITWORM (Byturus unicolor Say)

Connecticut B. H. Walden (June 23): Injury is largely confined to the St. Regis in New Haven County; fully as abundant as in an average year.

York C. R. Crosby and assistants: In Chautauqua County one berry patch was found badly infested by this pest, which was observed abundantly in only two locations in Ulster County, though plentiful in general. It is very abundant and destructive in one patch in Silver Creek, and at Sodus in Wayne County the beetle was injuring over 80 per cent of the blossom clusters in one planting.

RASPBERRY SAWFLY (Monophadnoides rubi Harris)

York C. R. Crosby and assistants: The raspberry sawfly is plentiful in all plantings in Chautauqua County, considerable damage being done.

RASPBERRY MAGGOT (Phorbia rubivora Coq.)

ine Mr. J. M. Mosher reports this insect as seeming to attack younger canes than the cane-borer beetle. In this case the canes are about 18 inches high. The infested canes are quite numerous. Maggots are still very young.

GRAPE

ROSE CHAFER (Macrodactylus subspinosus Fab.)

ssachusetts A. I. Bourne (June 23): From Middlesex County, E. R. Farrar, of South Lincoln, reported under date of June 18 that the rose chafer is present in approximately 10 per cent greater amount

than is normally the case, and that it began to make its appearance in that section about the 15th of the month. The first rose chafers were seen on the 12th of June and they are with us in numbers somewhat greater than normal. Several complaints have come in of their work on young fruit trees as well as on roses, grapes, and ornamentals, on which they are normally found.

Connecticut

W. E. Britton (June 23): The first beetles were seen on June 10, apparently more abundant than last year.

J. A. Manter (June 22): This insect was found injuring small apples to quite an extent at Mansfield, being a little more abundant than in an average year.

New York

E. P. Felt (June 21): This insect is doing considerable injury at North Chatham.

C. R. Crosby and assistants: Some injury is generally distributed in Dutchess County, while in Ulster County the insect is found causing injuries to grapes, roses, and peonies, and serious in three apple orchards. Injury has been noticed on newly set apples in Genesee County.

Virginia

W. J. Schoene (June 7): Damage is very severe, especially on grapes in the southern half of the Shenandoah Valley. The pest is also abundant in a large number of orchards in the same territory.

L. A. Stearns (June 21): The rose chafer was more numerous than usual during the first two weeks in June.

North
Carolina

F. Sherman (June 8): This insect occurs throughout the State, but complaints of serious damage to apple, cherry, grape, etc. are always from our mountain area exclusively. Two reports on June 5 indicate it as destructively prevalent in two adjoining mountain counties, Buncombe and Henderson.

Ohio

E. W. Mendenhall (June 13): The rose chafer is doing great damage to grapes, and apple trees, and to cherry tree leaves and fruit.

T. H. Parks (June 23): Rose chafers are reported uncommonly injurious to various crops, including young corn, roses, cherry leaves, grapes, and garden beans.

Indiana

J. J. Davis (June 19): Report has been received that the rose chafer is injuring roses at Culver, eating fruit at Fort Wayne, where it is abundant and destructive to apple, and is eating foliage and fruit at Columbus, Ind. In some cases apples are eaten to the core.

Tennessee G. M. Bentley (June 14): The rose chafer has been prevalent and is a serious pest in many of the counties. It ate the partly developed fruit.

GRAPE ROOTWORM (Fidia viticida Walsh)

New York C. R. Crosby and assistants: In vineyards unsprayed last year, the rootworm is causing serious injury in nearly all parts of the grape belt, and in three or four vineyards has caused a loss of 20 to 30 per cent of the vines, in Chautauqua County. Typical foliage injury is showing up considerably in some localities.

GRAPE BLOSSOM MIDGE (Contarinia johnsoni Sling.)

Michigan R. H. Pettit (June 15): Mr. Harman has just come back with specimens of the grape blossom midge. He reports from 3 to 5 per cent damage all over the vineyards visited and brings back specimens which proved the identity of the pest. As this is rather a new thing in Michigan, I am sending you this information. It has been present in one vineyard in Michigan, for three years but has been kept down by hand picking until the present season. It therefore bids fair to add one more to the list of grape troubles in our State.

A WEEVIL (Rhigopsis effracta Lec.)

California California Weekly News Letter, Vol. 5, No. 12 (June 16): Mr. John P. Coy reports a serious attack by the weevil Rhigopsis effracta on grapevines. He states that it confines its attack pretty much to the buds and tender growth and has been working on young grapevines, killing the new growth as fast as it shows up, and has destroyed a patch of sweet potatoes. Mr. Coy states that so far he has not been able to get satisfactory results with any insecticides.

W. D. Pierce (May 31): Specimens of Rhigopsis effracta Lec., a weevil, were sent in by Harry Smith, with the report that they were damaging the tender growth of grapevines. So far as I know this is the first charge against this species, which has formerly been reported as from yucca. The specimens are from San Bernardino County, and I presume are doing this damage because of the breaking of new ground. They are probably root weevils.

GRAPE PLUME MOTH (Oxytilus periscelidactylus Fitch)

Massachusetts A. I. Bourne (June 23): A few clusters pulled together by the larvae of the grape plume moth have been found through the vineyard, but this is not at all serious.

GRAPE LEAFHOPPER (Erythroneura comae Say)

Massachusetts A. I. Bourne (June 23): We are finding very few grape leafhoppers in the orchard this season.

The following is a list of the names of the persons who have been
admitted to the office of the Secretary of the State of New York.

1. *John Jay* (1753-1829)

John Jay was born on December 29, 1753, in New York City. He was a prominent statesman, diplomat, and jurist. He served as the first Chief Justice of the United States Supreme Court from 1789 to 1795.

He was also a member of the Continental Congress and the Founding Fathers of the United States. He was a strong advocate for the ratification of the Constitution and the establishment of a strong federal government.

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- New York C. R. Crosby and assistants: This insect is appearing more numerous every day. Many growers are becoming alarmed, and are investing in sprayers, in Chautauqua County. They are also abundant on raspberries and strawberries, but there has been little migration to the grapes in this county. Except in limited areas very near the lake, the hopper is very abundant now and is turning a few leaves brown. In Ulster County first nymphs were seen June 13, while in Dutchess County severe infestations are to be found in some places. In Seneca County it is also severe in a number of vineyards, and is particularly noticeable where grass, hedgerows, etc., are near the vines.
- Pennsylvania G. A. Runner (June 1): During the last week in May overwintering adults of several species were found extremely abundant in the more important grape-growing districts of Pennsylvania. Adults of E. comes were just beginning to migrate to the grape leaves in Erie County, Pa.
- Ohio G. A. Runner (June 1): During the last week in May overwintering species were found extremely abundant in the more important grape-growing districts of northern Ohio. Adults of E. comes were just beginning to migrate to the grape leaves in northeastern, Ohio.
- GRAPE FLEA-BEETLE (Haltica chalybea Ill.)
- New York C. R. Crosby and assistants: The grape flea-beetle is abundant in Orleans County this year and has caused severe injury to the buds in one vineyard near Eagle Harbor.
- Nebraska M. H. Swenk (June 15): During the first half of June, larvae of the grapevine flea-beetle were repeatedly reported doing serious injury to grape foliage in eastern Saline and southern Lancaster County.
- CURRENTS
- FOUR-LINED PLANT-BUG (Poecilopsus lineatus Fab.)
- Connecticut W. E. Britton and J. A. Manter (June 22): Four-lined leaf-bugs have just matured, and some bushes will be seriously injured. The insect was also observed in Hamden June 23.
- New York C. R. Crosby and assistants: Large numbers have been observed in numerous currant plantings. First, second, and third-stage nymphs are present, common, and general, and are destructive in two currant patches and one gooseberry patch. They are abundant in one planting in Ontario County.

IMPORTED CURRANT BORER (Aegeria tipuliformis Clerck)

New York C. R. Crosby and assistants: This insect is very common and generally destructive in Ulster County, and also very abundant and destructive in a planting near Westfield.

CURRANT APHID (Myzus ribis L.)

New York C. R. Crosby and assistants: The currant aphid is rather serious in Genesee County in neglected plantings, increasing rapidly in several plantings. It is exceedingly abundant on all unsprayed plantings. It is generally abundant in Orleans County, while in Ulster County it is common in most plantings except where the late dormant spray was applied.

IMPORTED CURRANTWORM (Pteronidea ribesi Scop.)

Massachusetts A. I. Bourne (June 23): The imported currantworm is proving to be quite abundant on the blocks of currants. Inasmuch as there were no currants on the plantation last year, very little regarding relative abundance can be given.

New York C. R. Crosby and assistants: This insect is rather abundant in a few plantings in Ontario County, and very common and abundant in all plantings in Chautauqua County, while in Genesee County it is found in neglected plantings. It is abundant in Honeoye Falls. In Ulster County it has been serious only where no control measures were practised.

GOOSEBERRY

IMPORTED CURRANTWORM (Pteronidea ribesi Scop.)

Nebraska M. H. Swenk (June 15): The imported currantworm did considerable damage in stripping gooseberries between May 15 and June 5, but no more than is usual for that pest.

CRANBERRY

BLACK-HEADED CRANBERRY WORM (Rhopobota naevana Hueb.)

Massachusetts A. I. Bourne (June 23): The black-headed fireworm on cranberry is much less abundant on the bogs than usually, at this time of year.

PECAN

SPITTLE INSECT (Cercopidae)

Louisiana T. H. Jones (May 10): Nymphs of an undetermined Cercopid on new growth of pecan were sent in by a correspondent, O. E. Hamilton, without accompanying letter.

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THE UNIVERSITY OF CHICAGO, CHICAGO, ILLINOIS, U.S.A.
DEPARTMENT OF THE HISTORY OF ARTS AND ARCHITECTURE
OFFICE OF THE DEAN

LETTER TO THE DEAN

TO THE DEAN OF THE UNIVERSITY OF CHICAGO, CHICAGO, ILLINOIS, U.S.A.
FROM THE DEAN OF THE UNIVERSITY OF CHICAGO, CHICAGO, ILLINOIS, U.S.A.
SUBJECT: THE UNIVERSITY OF CHICAGO, CHICAGO, ILLINOIS, U.S.A.
RE: THE UNIVERSITY OF CHICAGO, CHICAGO, ILLINOIS, U.S.A.

THE UNIVERSITY OF CHICAGO, CHICAGO, ILLINOIS, U.S.A.

THE UNIVERSITY OF CHICAGO, CHICAGO, ILLINOIS, U.S.A.
DEPARTMENT OF THE HISTORY OF ARTS AND ARCHITECTURE
OFFICE OF THE DEAN

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OFFICE OF THE DEAN

PECAN PHYLLOXERA (Phylloxera devastatrix Perg.)

- Mississippi R. W. Harned (June 23): This insect is attracting even more attention on pecan trees this year than was the case last year.
- Louisiana T. H. Jones (June 13): From the middle of May to the present date pecan phylloxera has been the subject of complaint from various parts of the State, in some cases entire trees 50 to 60 feet high being badly infested.

FALL WEBWORM (Hyphantria cunea Drury)

- Mississippi R. W. Harned (June 23): Present prospects indicate that this pest will be more serious than it has been during the past two years. It was very serious in 1921 and more so in 1922. This year complaints have been received from all sections of Mississippi while last year very few reports were received from the southern part of the State.

CITRUS AND SUBTROPICAL FRUITS

CITRUS

PURPLE SCALE (Lepidosaphes beckii Newman)

- Louisiana T. H. Jones (May 25): Infested material was sent in by Charles A Mundy, at Thibodaux.

CITRUS WHITEFLY..(Dialeurodes citri Ashm.)

- Louisiana T. H. Jones (May 25): Infested material was sent in by Charles A Mundy.

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF THE HISTORY OF ARTS AND ARCHITECTURE

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TRUCK - CROP INSECTS

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

- Massachusetts A. I. Bourne (June 23): The Colorado potato beetles on potatoes and tomatoes were present in large numbers and seemed unusually abundant. The dates of appearance varied somewhat in different fields according to the stage of development of the potato plants, but in most cases here in this immediate region the beetles seemed to be present in unusually large numbers.
- New York C. R. Crosby and assistants: Potato beetles were appearing in considerable numbers on Long Island, mating and ovipositing by June 9. By the middle of the month they were numerous in western New York.
- Wisconsin S. B. Fracker (June 15): The season in Wisconsin is very backward, but, apparently, potato beetles are not as common as usual.
- Illinois S. C. Chandler (May 16): At East St. Louis eggs are somewhat less numerous than ordinarily. None have hatched as yet. Weather is preventing injury by old beetles. (May 21): First eggs are hatching, later than usual. (May 28): Potato beetle grubs evidently are somewhat more numerous than last year.
- W. P. Flint (June 19): The Colorado potato beetle is rather scarce in central Illinois, but slightly more abundant than usual in the southern part.
- Idaho Fred D. Butcher (June 4): Adults are present in large numbers in Lee County. One patch examined had one or more egg clusters on every plant. According to observation on May 30, only a few eggs have hatched.
- South Dakota H. C. Severin and A. L. Ford (June 8): Colorado potato beetles are just laying eggs.

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

- Massachusetts A. I. Bourne (June 23): Slightly greater than normal numbers of flea-beetles are being found on tomato plants, as well as on potatoes.
- Connecticut F. L. Davis (June 19): Potato flea-beetles are attacking potatoes at Woodstock, with an estimated damage of 4 per cent. They are more abundant than last month and in an average year. Bordeaux should be applied earlier than is the common practice.
- New York C. R. Crosby and assistants: This pest is present in large numbers and doing considerable damage in Nassau, Ulster, Dutchess, Rensselaer, and Orleans Counties; it is also reported but less numerous from Chenango, Chautauqua, Ontario, Madison, and Wayne Counties.

CHAPTER III

THE HISTORY OF THE UNITED STATES

The history of the United States is a subject of great interest and importance. It is a subject which has attracted the attention of many writers and readers. The history of the United States is a story of growth and development, of struggle and triumph. It is a story which has shaped the destiny of a great nation.

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- aware J. F. Adams (May): Considerable injury to seed beds of tomato has been caused by this species, as usual. Another species, probably Systema taeniata, also has been quite injurious to these beds in certain places.
- consin C. F. Fluke (June 22): With the first appearance of potatoes above ground the flea-beetles appeared in large numbers, puncturing the leaves full of holes. They were more numerous than for several years.
- th Dakota R. L. Webster (June 20): Severe injury was done to potato foliage at Fargo.

WESTERN POTATO FLEA-BEETLE (Epitrix subcrinita Lec.)

- ho Claude Wakeland (May 26): The severe injury of this season to potato and tomato, while localized at Parma and Roswell, indicates that control measures may be necessary in the future.
- Don B. Whelan (May 28): Several commercial potato fields around Kimberly are severely affected.

POTATO APHID (Macrosiphum solanifolii Ashm.)

- onnecticut S. Tucker (June 20): This insect is attacking potatoes at Danbury.
- linois S. C. Chandler (June): First observed at East St. Louis on May 21 and very abundant on June 8.

POTATO LEAFHOPPER (Empoasca mali LeB.)

- va Fred D. Butcher (June 4): Crop of potatoes very late in Lee County. Leafhoppers found on early patches, 1 to 5 per plant, May 30.

CUTWORMS (Noctuidae)

- York K. E. Paine (June 15): Cutworms are abundant enough in one field of tomatoes in Chautauqua County to cause almost complete loss.

SWEET POTATO

TWO-STRIPED SWEET-POTATO BEETLE (Cassida bivittata Say)

- va Fred D. Butcher (June 9): Larvae are found on nearly every plant in a quarter acre in Monroe County. Leaves are dying.

CABBAGE

CABBAGEWORM (Pontia rapae L.)

- York E. W. Pierce (June 8): The cabbageworm was first observed about cabbage this week in Ontario County.



CABBAGE MAGGOT (Hylemyia brassicae Bouche')

- York W. D. Mills (May 26): This insect is causing considerable injury on early cabbage in the field in Nassau County. Attempts on a large scale have been made to reduce the amount in fields already infested by applying corrosive sublimate with a cart and hand-pressure tank. (June 2): The injury from the cabbage maggot is becoming evident in many fields of early cabbage. Kohl-rabi and cauliflower are also heavily infested. Many growers who used tar and sand were attempting to check the amount of maggot injury by an application of corrosive sublimate during the past week.
- E. W. Pierce (May 26): Maggot flies have been commonly observed in Ontario County, but they do not seem to be as abundant as they have been the past two years. (June 8): Maggots were first noticed on June 8. Those observed were evidently several days old. (June 15): Flies are abundant, and maggots have been working on the roots for the last 10 days.
- R. G. Palmer (June 15): This pest is not severe so far in Monroe County.
- R. F. Illig (June 16): The cabbage maggot in Wayne County is serious in seed beds which were not protected from the flies.

CABBAGE APHID (Brevicoryne brassicae L.)

- Wisconsin R. H. Clark (June 11): Cabbage aphids are bad on cabbage and radishes at Tomahawk.
- Illinois Chas. C. Compton (June 13): At Chicago an acre field of early cabbage was found very heavily infested with the cabbage aphid, resulting in the death of many plants that had begun to head. Other fields in the vicinity are but slightly infested at this date.
- Nebraska M. H. Swenk (June 15): Heavy injury to cabbage plants by this pest was reported in certain fields in Buffalo County during the first few days in June.

STRIPED FLEA-BEETLE (Phyllotreta vittata Fab.)

- York E. W. Pierce (May 28): The striped flea-beetle is causing serious injury in many cabbage seed beds in Ontario County.
- R. G. Palmer (June 15): This insect is abundant on cabbage in Monroe County.

WESTERN FLEA-BEETLE (Phyllotreta pusilla Horn)

- Iowa Claude Wakeland (May 26): Severe injury has been done to cabbage and cauliflower seedlings in the field at Parma and in cold frames. Early radishes are badly damaged. The pest is much more abundant than last season.

THE UNIVERSITY OF CHICAGO

The University of Chicago is a private research university in Chicago, Illinois. It was founded in 1837 and is one of the oldest and most prestigious universities in the United States. The university is known for its commitment to academic excellence and its diverse student body. It has a long history of producing leaders in various fields of study.

The university is organized into several divisions, including the Division of the Physical Sciences, the Division of the Biological Sciences, and the Division of the Social Sciences. Each division is further divided into departments and programs. The university also has a large library system and a number of research centers and institutes.

The University of Chicago is a member of the Association of American Universities and the Ivy League. It is also a member of the United Nations Educational, Scientific and Cultural Organization (UNESCO).

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The University of Chicago Press is the publishing house of the university. It was founded in 1887 and is one of the oldest and most prestigious publishing houses in the United States. The press is known for its commitment to academic excellence and its diverse range of publications. It has a long history of producing high-quality books and journals.

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CABBAGE CURCULIO (Ceutorhynchus rapae Gyll.)

iana J. J. Davis (June 15): On May 15 injured cabbage plants, the injury almost certainly that of the cabbage curculio, were received from Connersville.

FALSE CHINCH BUG (Nysius ericae Schill.)

th Dakota R. L. Webster (June 18): This makes three reports of injury to flax. This insect is also attacking cabbage and radish in Adams and Stutsman Counties.

STRAWBERRY

STRAWBERRY WEEVIL (Anthonomus signatus Say)

y York C. C. Wagoner (May 26): Good control was obtained by dusting arsenate of lead and sulphur (parts 1 to 5) in Ulster County. The second application is now being applied. (June 15): The strawberry weevil is numerous in general in Ulster County, causing from 30 to 90 per cent injury where no control measures were employed.

laware J. F. Adams (May 9): Serious injury is reported to certain varieties of strawberry, especially "Big Joe". One grower also reports injury to apple trees at Bridgeville.

nesota A. G. Ruggles (June 7): The strawberry weevil has been reported from a number of parts of the State doing considerable damage.

STRAWBERRY FLEA-BEETLE (Haltica ignita Ill.)

ine E. M. Patch (June 8): This is the second lot of beetles received within a few days from locality of Bridgton. We do not often have complaints about this insect.

y York P. D. Rupert (June 15): Moderate injury has been caused in Dutchess County.

C. C. Wagoner (June 15): The strawberry flea-beetle is serious in only one planting in Ulster County.

A FLEA-BEETLE (Haltica litigata Fall)

uisiana T. H. Jones (May 21): Numerous adults were sent in by a correspondent from Newllano, Vernon Parish, with information that "they seem to go in colonies and eat the leaves of the berries".

FOUR-MARKED LEAF-BEETLE (Cryptocephalus quadrimaculatus Say)

th Dakota R. L. Webster (June 12): The four-marked leaf-beetle is feeding mostly in axils of leaves and causing considerable damage at Fargo.



STRAWBERRY LEAF-BEETLE (Paria canella Fab.)

- New York W. D. Mills (May 28): The beetles were found abundant in several plantings in Nassau County, causing considerable damage to the foliage.
- J. B. Palmer (June 4): Specimens were received from Bernhards Bay, Monroe County.
- C. C. Wagoner (June 15): This insect is general and has potentialities of a good deal of destruction in Ulster County.

WHITEFLY (~~species undetermined~~)

- Idaho D. B. Whelan (June 8): Strawberry plants dead at Wendall. Nearby ones have whitefly on the under sides of leaves. Hundreds of the insects are found on each plant. They are much more abundant than in an average year.

A STRAWBERRY RED SPIDER (Tetranychus sp.?)

- California W. D. Pierce (May 31): The strawberry red spider is causing abandonment of many plantings near Mountain View.

STRAWBERRY SAWFLY (Empria maculata Norton)

- Minnesota A. G. Ruggles (June 7): One of the worst pests of the strawberry that we have had for many years is one of the sawfly larvae, probably Empria maculata.

ASPARAGUS

ASPARAGUS BEETLES (Crioceris asparagi L. and duodecimpunctata L.)

- Massachusetts A. I. Bourne (June 23): The asparagus beetle larvae of Crioceris asparagi and Crioceris duodecimpunctata are present in large numbers and are working with about normal activity.
- New York R. G. Palmer (June 15): Crioceris duodecimpunctata are very severe this year in Monroe County.
- K. E. Paine (June 15): Asparagus beetles are very abundant in all beds in Chautauqua County. (June 16): Beetles are abundant in almost all asparagus beds.
- Delaware C. O. Houghton (May 15): Asparagus beetles are very abundant on asparagus at Newark. First examples were observed May 2.
- Indiana J. J. Davis (June 15): Reports of injury by asparagus beetles have come to us from sections of central Indiana.

BEANS

PALE-STRIPED FLEA-BEETLE (Systema taeniata var. blanda Melsh.)

- Virginia W. J. Schoene (June 20): The pale striped flea-beetle has been abundant and inflicted severe damage upon beans and tomatoes in the vicinity of Richmond.

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MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

- th Carolina F. Sherman (June 8): Scouting at the close of 1922 showed the Mexican bean-beetle in 8 southwestern mountain counties. J. C. Crawford, formerly with the U. S. Bureau of Entomology and the National Museum, is conducting a Field Station for this insect at Bryson City. It was also reported with specimens May 10 from Culberson, Cherokee County, which is close to the Georgia-North Carolina Line. From May 22 to June 6 it has been found at various localities, representing most of its present range in the State.
- th Carolina Neale F. Howard (June 11): This pest is reported as doing serious damage in western South Carolina.
- J.A. Berly (June 14): This pest is reported from Walhalla and vicinity, also from Oconee County with a statement that it is attacking snap beans. Considerable damage has been done in gardens on beans.
- orgia Neale F. Howard (June 11): This pest is reported as doing serious damage in the northeastern part of the State.
- ntucky H. Garman (June 11): The Mexican bean beetle is attacking beans in Owsley County.
- ennessee Neale F. Howard (June 11): This pest is reported as doing serious damage in the eastern part of the State. Prof. G. M. Bentley writes that many inquiries are received at his office every day and that "it is creating havoc in this State."
- G. M. Bentley (June 13): This pest has been located by us recently in 8 new counties in the State. These are Pickett, Clay, Jackson, Macon, Trousdale, Sumner, and Cheatham.
- abama Neale F. Howard (June 11): Dr. F. L. Thomas reports this pest from Auburn, in Lee County.
- ssissippi Neale F. Howard (June 11): Professor Harned reports this insect from Itawamba County in the northeastern part of the State. This is the eighth State known to be infested with this insect in the southeastern United States.

BEAN LEAF-BEETLE (Cerotoma trifurcata Foerst.)

- ennessee G. M. Bentley (June 13): This pest has ~~been~~ damaging the bean crop in a number of counties this year. The reports were made during the months of April and May. It has disappeared at present.
- linois S. C. Chandler (May 29): At Pulaski nearly all bean fields are infested. Leaves were badly riddled May 12, but beetles are now leaving and plants are generally recovering.

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SEED-CORN MAGGOT (Hylemyia cilicrura Rond.)

- New York C. R. Crosby (June 14): Injured bean seedlings have been received from Livingston County. (June 18): Infested beans have been received from Rodman.
- R. G. Palmer (June 15): This pest is severe in many bean plantings in Monroe County.

- Tennessee G. M. Bentley (June 13): This pest proved very serious in Knox County to the snap beans. Several acres were completely killed. Fresh tankage had been applied on the surface where injury was serious.

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

- Kansas J. R. Horton (June 8): The first complaint that has come to my attention in this State was from Sedgwick County, on May 21. It is reported as injurious to cotton in Oklahoma and Texas, eastward to the Carolinas.

PEAS

PEA APHID (Illinoia pisi Kalt.)

- Connecticut B. G. Southwick (June 22): The pea aphid is attacking peas, apples, and potatoes in Hartford County. Infestation is 110 per cent as compared with an average year. Ladybugs are present.
- New York W. D. Mills (June 9): This pest is very abundant in Nassau County. Peas are now generally in bloom or past the bloom stage.
- Roy Latham (June 20): Peas are raised at Orient only in gardens. Normal abundance is noted.
- Ohio T. H. Parks (May): These aphids, which have been plentifully scattered throughout alfalfa and red clover, are now heavily parasitized. Their presence has not interfered with the growth of the crops. We have had one week of dry, warm weather. (June 22): One field of alfalfa is known to have been plowed under because of damage from this aphid. It has now been killed by fungus and parasitic and predacious insects. Infestations occur in western and central counties.
- Illinois W. P. Flint (May 18): This insect is present in moderate numbers in pea fields. No damage has been reported as yet.
- Michigan R. H. Pettit (June 16): With regard to the pea aphid, I visited the Jackson fields on Wednesday and found the aphids present in moderate numbers. In a few instances they amount to a fraction of 1 per cent. I found little colonies of females with a family of young at the tip of the plant. The Jackson area is partly in bloom, although the pods in some fields are well formed and the peas half-grown. They expect to cut in less than ten days for the most part. This morning I received a letter from the agriculturist for the W. R. Roach Canning Co.,

Grand Rapids, in which he reports entirely similar conditions in the pea canning areas of the western part of the State. He feels that the hazzard to pea canners has almost passed and I have advised a policy of watchful waiting with everything ready to dust should developments warrant dusting. In other words, I think we are going to get by this year, but we came altogether too near the trouble to feel easy.

Wisconsin J. E. Dudley (May 28): Aphids are attacking clover and alfalfa in Columbia and Jefferson Counties. They are probably less abundant than in the average year, and they are slowly but steadily increasing. There is no apparent damage as yet. On one 10-acre field a moderate infestation of the aphid has already been controlled 80 per cent by ladybeetles, which are very numerous. The season in this State is from 10 days to 2 weeks behind normal.

New Mexico W. E. Emery (May 28): This aphid has just commenced to attack the garden peas in Dona Ana County.

CUCUMBERS

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

Connecticut J. A. Manter (June 22): The striped cucumber beetle is more abundant than usual at Mansfield on summer squash. Many plants would have been killed except for the control used.

New York C. R. Crosby and assistants: The striped cucumber beetle appeared during the second week in June on Long Island in very serious numbers and was recorded as seriously abundant about the middle of the month in western New York.

Virginia W. J. Schoene (June 20): This pest is rather severe on squash and melons from the Piedmont and the Coastal Plain to tidewater.

Indiana J. J. Davis (June 15): This pest has been the subject of numerous complaints the past month.

Kentucky H. Garman (June 14): This insect is attacking cucumbers at Bowling Green, causing severe damage.

Wisconsin Van W. Cass (June 10): The striped cucumber beetle is very bad on cucumbers in the locality of Madison.

J. E. Dudley, Jr. (June 11): The striped cucumber beetle is attacking melon, cucumber, and squash at Madison. It is less abundant than usual for this time of year, but the season is quite backward. Only one or two beetles were seen in May. Seedling cucumbers are entirely destroyed where no dusts have been applied. Two species of ground beetles are present. Calcium cyanid dust containing 15, 25, and 50 per cent of calcium cyanid has been remarkably effective in killing beetles on cucurbits. Even beetles caught in flight die immediately. There appears to be no question that this dust will be completely effective against this insect.



Illinois Chas. C. Compton (June 12): Cucumbers and squash are suffering severely from the attack by the striped cucumber beetle in the Chicago trucking district. Where no control has been practiced the plants have been killed outright.

South Dakota H. C. Severin and A. L. Ford (June 8): This pest is attacking cucurbits throughout the entire State. Considerable damage is done.

MELONS

MELON APHID (Aphis gossypii Glov.)

Iowa Fred D. Butcher (June 9): The first aphid was discovered on water-melons on June 8 in Monroe County. Winged adults were easily found on a 1½ acre patch. Only one colony was located.

SQUASH

SQUASH BUG (Anasa tristis DeG.)

Massachusetts A. I. Bourne (June 23): H. F. Tompson, in charge of the Field Station at Lexington, reports finding an unusually large number of squash bugs, particularly during the week of June 10. Squash bugs are proving to be present in considerable abundance -- somewhat greater than normal. The first eggs laid in the field were observed about the 20th of the month.

Georgia O. I. Snapp (June 11): Squashbugs are very numerous and were causing serious damage to 20 acres of watermelons near Perry, Ga. Growers are hand-picking and spraying with nicotine sulphate.

ONIONS

ONION THRIPS (Thrips tabaci L.)

Massachusetts A. I. Bourne (June 23): The greater part of the last 10 days of May and thus far in June has been very dry, so that fields and crops already begin to show some effects of the drought. This has had another effect in that here in the Valley the onion thrips has begun to make its appearance much earlier than we normally expect to find it and is fast spreading. Finding weather conditions ideal for its increase, it is in some fields, particularly where seed onions have been planted near sets, beginning to cause some alarm.

New York H. C. Hockett (June 14): The thrips is infesting onions and seedling cauliflower in Suffolk County.

ONION MAGGOT (Hylemyia antiqua Meig.)

New York A. G. Newhall (June 9): Injury was first observed during the past week in Wayne County.

F. H. Bond (June 13): It is not at all general or serious so far this year in Oswego County. (June 16): Onion maggots were found on June 13.

THE FIRST PART OF THE HISTORY OF THE
 REFORMATION OF THE CHURCH OF ENGLAND
 UNDER KING HENRY THE EIGHTH

BY
 JOHN CALVIN

TRANSLATED BY
 JOHN CALVIN

IN TWO VOLUMES
 THE SECOND VOLUME

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Wisconsin J. E. Dudley, Jr. (June 7): Thrips are attacking onion in parts of Racine County. They are more abundant in certain sections. The season is late, there is considerable rain, and the temperature is below normal. Onions are much smaller than normal and maggots are developing as rapidly as in a normal season; consequently damage to small onions is considerably greater than usual.

Illinois Chas. C. Compton (June 12): The onion maggot is much more severe this year than last. Onions grown for sets are suffering most. At this time the injury is just beginning to show up in the Chicago district.

CUTWORMS (Euxoa sp.)

Indiana J. J. Davis (June 15): Cutworms were received on June 5 from Akron, where they were reported as destroying onions on a large scale.

WIREWORMS (Elateridae)

New York F. H. Bond (June 18): Considerable injury to onions on a bed of comparatively new muck was noted June 13 in Oswego County. Wireworms were found under plants in many cases, but it is not absolutely certain that they were the cause.

Hawaii Fred Maw (May): Do you know of any way to get rid of wireworms? Pheletes sp. are eating up the onion crop at Meridian.

MISCELLANEOUS FEEDERS

BLACK SWALLOW-TAIL BUTTERFLIES (Papilio polyxenes Fab.)

New York A. G. Newhall (June 18): These butterflies are common on the muck where celery is grown and injury may, therefore, be expected later on.

GARDEN WEBWORM (Loxostege similalis Guen.)

Alabama Neale F. Howard (June 11): This pest is abundant on sugar beets and Swiss chard in the Birmingham district.

GREEN FLEA-BEETLE (Disomycha sp. n.)

Porto Rico R. E. Danforth (May 19): The new green flea-beetle with orange prothorax, Disomycha sp. n., common on beets and chard, is also attacking white potatoes and turnip leaves.

SPINACH LEAF-MINER (Pegomyia hyoscyami Panz.)

New York W. D. Mills (June 9): This insect is becoming rather abundant on both spinach and beets, and it was also found to a considerable extent on Rumex acetosa in Nassau County.



CATERPILLARS

va Carl J. Drake (May 25): I have just received some rhubarb containing caterpillars tunneling the stalks. Carl Heinrich, of the U. S. Bureau of Entomology, states that it is a species of *Pyralidae* (*Pyraustinae*), but does not know the species.

ROOT-KNOT NEMATODE (*Heterodera radicicola* Dreef-Mueller)

braska M. H. Swenk (June 15): The ruination of a patch of radishes in Morrill County by the root-knot nematode was reported during the middle of June.

CUTWORMS (*Noctuidae*)

New York A. G. Newhall (June 1): Cutworms are attacking onions and lettuce at Williamson. Most cutworms are two-thirds grown. They were first observed near Sodus April 20 of this season. They seem to be less serious where fall plowing was done last fall or where the land was thoroughly worked this spring, planting the crop late. The poison mash bait works best after other food has become less abundant. For this reason it is most effective after the crop has been thinned and weeded. Cutworms have been found in one man's lawn doing much damage.

M. D. Leonard and H. Dietrich (June 15): Cutworms are attacking melons and tomatoes at Appleton. I see a lot of them when planting, but broadcasting bran, moistened and sprinkled with Paris green, does the trick.

F. H. Bond (June 18): Cutworms are doing considerable injury to lettuce, onions, and cabbage on a few farms in Oswego County. They are found in small numbers on practically all muck land, in most cases not doing enough damage to warrant application of poison bait. Cutworm injury was serious throughout the muck sections last year. The larvae are nearly mature and little more injury is expected.

Iowa C. N. Ainslie (June 2): Complaints are heard on every hand at Sioux City of depredations of these pests. Gardens, potatoes, and corn are attacked and injured.

A WEEVIL (*Hyperodes hyperodes* Deitz.)

California W. D. Pierce (May 31): The note on *Listronotus* sp. published last month (Vol. 3, p. 88) refers to this species.

FOUR-LINED PLANT-BUG (*Poecillocapsus lineatus* Fab.)

New York Roy Latham through M. D. Leonard (June 19): A few occur at Laurel, L. I., but they are very abundant at Calverton, where thousands were found in headlands of fields feeding on *Bidens*, *Rubus*, *Ambrosia*, and *Rhus*, but they seemed to prefer *Bidens*. They had started working also on beans near the edge of the field.

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FALSE CHINCH BUG (Nysius ericae Schill.)

North Dakota R. L. Webster (June 15): Reports have come in from Adams and McIntosh Counties to the effect that these false chinch bugs were destroying flax. I can find no records in the literature of such injury. Nymphs feed on Russian thistle in fields and may be affecting weeds more than the crop.

GARDEN SLUG (Agriolimax columbianus Gld., Agriolimax agrestis L., and A. californicus Cooper)

California W. D. Pierce (May 31): Not only is the small garden slug bad here, but three huge woodland species at least are doing damage to gardens along creeks. These slugs reach 6 and 7 inches in length and eat all kinds of garden plants.

SNAIL (Helix aspersa Muller)

California W. Dwight Pierce (May 31): Much damage is being done on the Peninsula from San Bruno to Palo Alto by an imported snail, which was brought in by Frenchmen to eat. They are spreading rapidly and are very injurious. They are also at Oakland.

SOWBUG (Porcellio scaber Latr.)

California D. W. Pierce (May 31): Sowbugs, mainly Porcellio scaber Latr., are very bad here, and in fact all around the Bay, and very destructive to young plants.

AN APHID (Myzus braggii Gillette)

Louisiana T. H. Jones (June 4): A correspondent wrote to the experiment station, complaining of injury by "little green lice" to globe artichoke. No specimens were sent.

MILLIPEDS (Diploiuulus luscus)

Michigan R. H. Pettit (May 28): A market gardener at Muskegon has a great deal of trouble with millipeds in muck. The millipeds were identified by Dr. Chamberlain at Washington as Diploiuulus luscus, a species introduced long ago from Europe. The gardener has four acres of muck infested with these millipeds. They do serious injury to lettuce and celery; cabbage seems to come through with little damage.

S O U T H E R N F I E L D - C R O P I N S E C T S

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

North Carolina Franklin Sherman (June 8): Boll weevils have been reported from the following Counties: Moore, Harnett, Robeson, Scotland, Lenoir, Cumberland, Mecklenburg, Sampson (central part), and Cabarrus. At this date (June 7) it is evidently out in all our heavily infested



sections in the southeastern half of our cotton area. None have yet been received from the more northerly part invaded last summer, i. e., north of an east-and-west line drawn through Raleigh.

R. W. Leiby: The first authentic boll weevil was taken out of hibernation for season on April 17, and the second on April 24. Both were found on a canvas frame while jarring for the plum curculio on peach trees.

Geo. A. Maloney: The boll weevil has been reported as present at the following points: Laurinburg, Wadesboro, and Gibson.

South Carolina J. L. Walton (May 18): Reports from the Southern Cotton Oil Company's mill managers show that weevils have been found on young cotton at Dillon, S. C.

Geo. A. Maloney: The boll weevil has been reported as present at the following points: Bennettsville, Georgetown, Chester, Marion, Allendale, Sumter, Abbeville, Darlington, and Laurens, from May 12 to May 29, inclusive.

Georgia Geo. A. Maloney: The boll weevil has been reported as present at the following points: Vienna, Monticello, Fort Gaines, Cordele, Commerce, and Orangeburg, from May 29 to May 31.

J. L. Walton (June 1): A report from S. Schwarzweiss, cotton exporter, Waynesboro, Ga., indicates that the weevil is plentiful in practically all parts of Burke County, Ga.

Florida Geo. A. Maloney (May 29): The boll weevil has been reported as present at Madison on this date.

Alabama Geo. A. Maloney: The boll weevil is present at the following points: Clayton, Opelika, Elba, and Gadsden, on May 29.

Texas M. C. Tanquary (June 15): The percentage of boll weevil successfully emerging from hibernation in central Texas indicates a fairly heavy infestation for the early part of the season.

F. F. Bondy (May 23): Report indicates a fairly heavy infestation of the boll weevil at Hearne, Texas.

FALL ARMYWORM (Laphygma frugiperda S. & A.)

South Carolina J. A. Berly (June 11): The fall armyworm destroyed 6 acres of cotton and 10 acres of vetch before being checked. It has been found in three places in this immediate vicinity, in each case starting on vetch. They were eating holes in the peaches on a few trees adjacent.

S. C. Stribling, County Agent (June 14): This insect is reported from Gaffrey as attacking cotton.

COTTON LEAFWORM (Alabama argillacea Huub.)

T. C. Barber (June 14): Worms have appeared in considerable numbers in several localities during the past week. The worst infestations have been observed in the neighborhood of Rio Hondo, but many can be found near Brownsville. Dusting the plants with calcium arsenate is being generally done to combat them.

BOLLWORM (Heliothis obsoleta Fab.)

Philip Luginbill (June 15): The caterpillars seriously injured vetch and when this was cut spread out and attacked adjacent crops, such as cotton, corn, and cowpeas.

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

F. Sherman (June 8): This insect was epidemic with us on young cotton in 1907, but seldom reported since until the last two years, when it was often mistaken for the boll weevil and also reported on account of its own injuries to young cotton. Its appearance in young cotton this year slightly precedes that of the boll weevil. Mildly epidemic with us now, it is reported from Wayne, Greene, Nash, Halifax, and Robeson Counties. The correspondence when explicit indicates that it is confined chiefly to lands which were in peas the preceding year.

COTTON APHID (Aphis gossypii Glov.)

Geo. A. Maloney (May 29): Cotton lice have been observed at Vienna.

W. F. Turner (June 23): I am convinced that the main cause of their abundance was the use of calcium arsenate against the boll weevil. The lice get dusted with poison, and the main factor in their control, the Coccinellids, eating them with this frosting, are killed. That lets the aphids multiply in peace.

Geo. A. Maloney (May 29): Cotton lice have been observed at Tallulah, La.

Geo. A. Maloney (May 29): Cotton lice have been observed at Corpus Christi, Texas.

TOBACCO

CUTWORMS (Noctuidae)

John Fay (June 22): Cutworms have been reported from Portland, Conn., in much more destructive abundance than in an average year. Poison bait, hunting for worms by hand, and poisoned plants are remedies used.



SUGAR-CANE

ANOMALA (Anomala orientalis Waterh.)

Connecticut W. E. Britton (June 23): White grubs believed to be this species have eaten the roots of grass in lawns on half a dozen premises in the immediate vicinity of where adults were taken in 1920 and 1921.

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana T. E. Holloway and W. E. Haley (May 24): Larvae are killing young plants at New Orleans and Franklin.

SUGAR-CANE BEETLE (Ligyrus (Euetheola) rugiceps Lec.)

Louisiana T. E. Holloway and W. E. Haley (May 24): Adults have killed some young sugar-cane plants at Franklin.

FOREST AND SHADE - TREE INSECTS

MISCELLANEOUS FEEDERS

PERIODICAL CICADA (Tibicen septendecim L.)

BROOD XIV (SEVENTEEN-YEAR RACE)

Massachusetts A. I. Bourne (June 23): The 17-year locust has been reported as appearing in Pocasset (township of Falmouth) in great numbers on June 12. Most of the territory there has been burned over by a tremendous wood fire (May 23-26, last) so there is but little undergrowth and no foliage left. The cicadas are hanging from the dead scrub oaks and charred pine branches in vast numbers. Similar conditions existed on territory which escaped the ravages of the fire. So far I have no complete data on this brood, but from my personal observations its range is from near Monument Beach east to Sagamore, south to S. Sandwich and west to Pocasset.

New York R. M. Lupton (June 7): The periodical cicada is very abundant in scrub oak sections on the central part of Long Island.

Pennsylvania S. W. Frost (June 8): Locusts have been emerging in considerable numbers in Adams County, but no damage has been noted.

Maryland W. L. McAtee (May 28): Specimens were sent to me for determination from Elkridge.

A. L. Quaintance (June 4): I heard yesterday in the wood on the back part of my farm a few periodical cicadas. I should judge there were 10 or 12 of these insects within hearing distance.

THE

AMERICAN

REVIEW OF THE PROGRESS OF THE NATION
IN THE YEAR 1851

BY

JOHN C. CALHOUN, ESQ.
OF THE SENATE OF THE UNITED STATES

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- ginia Rex Hunt (June 26): Observed a few adults and cast skins early in June in the Brushland near my home in Clarendon.
- o R. S. McKay (May 30): These insects are very numerous, covering a small area in Batavia and Stonelick Townships in Clermont County. Adults were first noticed May 27.
- T. H. Parks (June 23): Locusts have appeared in the southern counties in swarms larger than expected. Lawrence County has the most. Swarms are reported to date from Gallia, Scioto, Pike, Ross, Adams, Brown, Clermont, and Hamilton Counties. The survey is not yet complete.
- ennessee G. M. Bentley (June 13): Brood XIV is occurring as scheduled. In some sections we are having reports of serious injury being done to peaches and apples.
- Lee M. Hutchins (June 15): Heavy injury has been reported from locusts on newly cleared ground at Kingston, particularly on trees in their second and third year in the orchard; the shoots $1\frac{1}{4}$ to $1\frac{1}{2}$ inch in diameter are partially or completely broken off.
- Alabama J. J. Davis (June 13): The locust is reported as abundant in a grove four or five miles north of La Fayette on June 13. Infestation is not yet confirmed. (June 15): Investigated today. Evidence of presence but no locusts found. A farmer reports that they were not extremely abundant.
- BROOD XXII (THIRTEEN-YEAR RACE)
- Mississippi Geo. H. Kent (May 26): The 1923 brood of the periodical cicada appeared in Franklin County in large numbers about the earlier part of May. I have taken notes on this insect for 52 years past as follows: 1871, 1884, 1897, 1910 and now in 1923. Stragglers will appear again in 1924 as they have in 1872, 1885, 1898, and 1911, and have formed, eventually, a new brood of some considerable scientific value and importance.
- R. W. Harned (June 7): We have now received specimens of the periodical cicada or 13-year locust, belonging to Brood XXII, from each of the counties where it had previously been reported, that is, Adams, Amite, Claiborne, Franklin, Jefferson, and Wilkinson Counties. Besides that we have received specimens from three other counties, Warren, Hinds, and Utica.
- Louisiana T. H. Jones (June 14): The first 1923 adults of this brood of which we have record were taken on May 8 at a point in Livingston Parish directly across the Amite River from Magnolia (East Baton Rouge Parish). Later on during May and early June colonies were noted a few miles to the north and east of Baton Rouge (East Baton Rouge Parish). Prof. O. W. Rosewall of the Louisiana State University has specimens as follows: Deerford (E. Baton Rouge Parish); Hope Villa (Ascension Parish); Jackson (E. Feliciana Parish). I also have a verbal report, without specimens, of the appearance of the species at St. Francisville

1. The first part of the paper is devoted to a general discussion of the problem of the origin of life. It is shown that the problem is one of the most important and most difficult in the history of science.

2. The second part of the paper is devoted to a detailed discussion of the problem of the origin of life. It is shown that the problem is one of the most important and most difficult in the history of science.

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(West Feliciana Parish). In connection with the appearance of the cicada near Baton Rouge, we have heard it reported that the insect appears every seven years and that blackberry fruits are poisonous when it appears because the cicadas lay their eggs in the fruit.

GIPSY MOTH (Portaetria dispar L.)

Massachusetts A. I. Bourne (June 23): The gipsy moth is not proving as abundant as usual, and its egg masses in the vicinity of East Wareham have apparently been very heavily parasitized. Owing to heavy rains about the 15th or 16th, Mr. Farrar states that he has seen scarcely one of the gipsy moth this season, indicating that the infestation is very light indeed. Mr. A. R. Jenks of West Acton, in Middlesex County, reports in his region that gipsy moth work is almost negligible.

BROWN-TAIL MOTH (Euproctis chrysorrhoea L.)

Massachusetts A. I. Bourne (June 23): A. R. Jenks of West Acton, in Middlesex County, reports the brown-tail moth work almost negligible. Mr. Farrar states that he has seen scarcely a brown-tail caterpillar this season, owing to heavy rains about the 15th or 16th, indicating that the infestation is very light indeed.

CANKERWORMS (Alecophila pomotaria Harr. and Paleacrita vernata Peck.)

New Jersey H. B. Weiss (June 1): Considerable damage has been done to forest trees at Morristown.

Iowa Fred D. Butcher (June 1): Cankerworms are stripping elms and unsprayed apple orchards in different parts of Louisa County.

Wisconsin S. B. Fracker (June 15): Cankerworms are less injurious to elm than in 1921 and 1922 in southeastern counties; they are worse from Madison to Spring Green.

FOREST TENT CATERPILLAR (Malacosoma disstria Huebn.)

Massachusetts A. I. Bourne (June 23): From southern Worcester County a report was received that to some extent the forest tent caterpillars were much more abundant than last season and, in fact, thicker than for many years all through the section of Framingham.

Connecticut J. A. Manter (June 23): The tent caterpillar is now in the pupa stage and is on the increase at Mansfield.

New York L. J. W. Jones (June 15): This insect is attacking maples at Bainbridge. It is probably increasing. The damage cannot be computed but apparently is slight here. A few wasplike parasites of various species are present.

New Jersey H. B. Weiss (June 1): Larvae are more plentiful than usual in Watching Mountains outside of Somerville and Bound Brook, with no serious injury.

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Minnesota A. G. Ruggles (June 7): This insect is at work in the wooded areas north and west of the Twin Cities. It does not seem to be doing quite the damage that it did last year, owing I suspect to the increased number of parasites.

North Dakota R. L. Webster (June 5): First report from Kenmare in the north-western part of the State.

Oregon Washington News (June 11): Nature is coming to the aid of western Oregon, whose caterpillar invasion science could not halt. Parasitic flies are laying eggs in the caterpillar fur. The eggs hatch and the parasites gnaw. The caterpillar squirms, staggers, curls up, and dies. Millions of dead worms are in the outskirts of Corvallis and on the road to the Yaquina Valley, whence they came. In a few days all will be dead and a good rain will revegetate the country, which they stripped of greenery.

A. L. Lovett (June 15): Worms reported stopping trains are tent caterpillars, which are mostly gone.

SPANWORM (Ennomus subsignarius Huebn.)

New York G. E. Smith (June 9): The caterpillars are very abundant and have partly defoliated entire woods at the present time in Orleans County.

Indiana J. J. Davis (June 15): Snow-white linden moth larvae are defoliating a 10-acre patch of hardwood trees, including oak, maple, chestnut, and hickory, at Forest, near Frankfort, on June 12. (June 16): A correspondent writes that he has 50 acres of valuable timber which these caterpillars are "literally eating up" at Russellville. The walnut, ash, and hickory are especial favorites.

MARCH FLIES (Bibio albipennis Say)

Maine E. M. Patch (June 10): A. L. Merrill reports that millions of these little pests are on his trees at Auburn.

A NOCTUID (Ania limbata Haw.)

New York W. T. M. Forbes (June 1): Caterpillars have been sent in from Highland Mills and are reported as being rather injurious on horse chestnuts the past few seasons.

ARBORVITAE

ARBORVITAE LEAF-MINER (Argyresthia thuiella Pack.)

Maine E. M. Patch (June 23): This insect is causing considerable consternation at a nursery and to landscape gardeners at Bar Harbor.



ASH BORER (Podosesia syringae Harris?)

North Dakota C. N. Ainslie (June 11): This borer is clearly Lepidopterous and probably a Sesiid. Young ash trees here are drilled almost universally by these larvae, and I have counted more than 30 empty chrysalids projecting from a single small tree 3 inches in diameter. The larvae appear to work only in the old wood where the bark is rough. They have crippled and killed many trees here, where trees are at a premium. This borer, or a similar one, attacks lilacs also.

BIRCH

BIRCH LEAF-SKELETONIZER (Bucculatrix canadensisella Chamb.)

New York M. D. Leonard (June 22): Injury is fairly abundant on many white birches on the outskirts of Albany.

AN APHID (Euceraaphis deducta Baker)

Connecticut W. E. Britton (June 25): This insect is attacking birches at New Haven, Meriden, and Waterbury. It covered automobile tops and clothes of pedestrians in city streets, at Waterbury during the week ending June 16 and at New Haven during the week ending June 23.

CAMPHOR

CAMPHOR SCALE (Pseudaonidia duplex Ckll.)

Louisiana T. H. Jones (June 1): At a meeting of the Louisiana Entomological Society in New Orleans on this date W. D. Whitcomb of the U. S. Bureau of Entomology reported the fact that this scale had been found to be present in Lake Charles.

ELM

ELM LEAF-BEETLE (Galerucella luteola Mull.)

Connecticut and New York F. A. Bartlett (June 23): This insect is attacking elms in Fairfield and Westchester Counties. It is too early to find many present. The season is very late, but some egg masses are present. No great damage has been done so far. Slight increase is noted compared with an average year.

New York M. D. Leonard (May 25): Beetles have been observed and their feeding holes are becoming noticeable in large elms all over the town of Greenwich, in Washington County. Village authorities report considerable damage last year and will undertake spraying this season.

ELM COXCOMB GALL (Colopha ulmicola)

New York M. D. Leonard (June 22): Galls are abundant on many young trees bordering a pond near outskirts of Albany. A few winged forms are present.



WOOLLY ELM APHID (Eriosoma americanum Riley)

- New York E. P. Felt (June 22): This aphid is very bad on elm at Steventown.
- G. M. Coddington (June 20): The woolly elm aphid is doing more damage to elm than last year at Westchester.

SPINY ELM CATERPILLAR (Eu Vanessa antiope L.)

- New York G. M. Coddington (June 20): More of these caterpillars are reported than for several years in Westchester County.
- New Jersey H. B. Weiss (June 16): The spiny elm caterpillar is more prevalent than usual in the northern half of the State on elms and poplars. No unusual or severe damage has been noted. Larvae are almost full-grown.

ELM SCALE (Gossyparia spuria Modeer)

- New York C. R. Crosby (June 4): Infested elm leaves have been received from Rochester.
- Iaho Don B. Whelan (May 28): A specimen of twigs mailed to this office from Twin Falls was badly incrustated.

HICKORY

HICKORY BARK-BEETLE (Scolytus quadrispinosus Say)

- Indiana J. J. Davis (June 15): We continue to receive reports of damage to hickories by this beetle from various parts of the State.

MAY BEETLE (Lachnosterna spp.)

- Indiana J. J. Davis (June 15): May beetles were reported defoliating hickory at Connersville on June 11.

LOCUST

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

- New Mexico W. E. Emery (May 28): This insect is doing quite a bit of damage to the locust tree in Dona Ana County.

MAPLE

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

- New York E. P. Felt and M. D. Leonard (June 21): The cottony maple scale is reported as quite generally distributed on soft maple in Orange County at present and abundant.
- Virginia L. A. Stearns (June 21): This scale is more common than usual on soft maple and numerous inquiries are being received from Leesburg concerning it.

Indiana J. J. Davis (June 15): Cottony masses are now becoming conspicuous so that they are noticeable to the casual observer. Reports are coming in. We expect trouble similar to that in 1922.

SILVER MAPLE LEAF-MITE (Phyllocoptes quadripes Shim.)

New York M. D. Leonard (June 20): Reported appearance objectionable on shade trees at Kenwood.

ALDER BLIGHT (Prociphilus tessellatus Fitch)

North Carolina F. Sherman (June 8): Recently somewhat of an epidemic of wooly maple aphid has occurred ⁱⁿ several counties in the central part of the State — Rockingham, Granville, and Forsyth.

OAK

OAK LEAF-ROLLER (Tortrix quercifoliana Fitch?)

Connecticut F. A. Bartlett (June 23): The oak leaf-roller is attacking pin oaks in Stamford vicinity. Some trees entirely defoliated were sending out new shoots.

PINE

PINE-LEAF SCALE (Chionaspis pinifoliae Fitch)

Massachusetts A. I. Bourne (June 23): The young of this scale began to hatch and appear on the leaves the 20th to the 22d of May.

Nebraska M. H. Swenk (June 15): Reports of injury by this insect continued to be received during late May and early June.

A SCALE INSECT (Toumeyella pini King)

Nebraska M. H. Swenk (June 15): A new center of infestation by this insect was located in southern Dodge County, the only previous locality in the State where it is known to occur being in northeastern Saline County.

SPRUCE

SPRUCE BUDWORM (Harmologa fumiferana Clem.)

Michigan R. H. Pattit (May 23): Spruce budworm on spruce was sent in from Fosters. Miss McDaniel reports the emergence of adult moths this morning. This emergence, no doubt, is hastened by the fact that they were kept in the insectary from the 10th inst. until the present time.



WILLOW

IMPORTED POPLAR AND WILLOW BEETLE (Plagioder a versicolor a Laich.)

- New York G. M. Coddington (June 21): I have seen trees in various parts of Westchester County nearly defoliated by this beetle.
- Connecticut and New York F. A. Bartlett (June 23): This beetle seems to be a very serious pest on willow and poplar in Fairfield and Westchester Counties. It is increasing.

INSECTS ATTACKING GREENHOUSE
AND ORNAMENTAL PLANTS

ROSE

ROSE MIDGE (Dasyn eura rhodophaga Coq.)

- Indiana J. J. Davis (June 15): This is reported as a serious pest in greenhouses at Evansville.

ROSE LEAFHOPPER (Typhlocyba rosae L.)

- New York M. D. Leonard (June 5): This pest is common and doing considerable injury to foliage on a number of bushes in the town of Slingerlands (Albany County). It is present in all stages. (June 15). Report has been received from Salamanca. Most bushes in town are affected unless sprayed.

ROSE LEAF-BEETLE (Nodonota puncticollis Say)

- Pennsylvania T. L. Guyton (June 14): This pest is reported as rather numerous at Harrisburg.

ROSE CURCULIO (Rhynchites bicolor Fab.)

- North Dakota R. L. Webster (June 20): Reports from widely scattered points in the State indicate the usual amount of damage by this insect to cultivated roses.

SOWBUGS (Crustacea)

- Indiana J. J. Davis (June 15): On June 9 sowbugs were reported as injuring rose roots at Washington. On June 5 they were reported as injuring young bean and pea plants at Madison.

MISCELLANEOUS

SAY'S BLISTER-BEETLE (Pomphopoea sayi Lec.)

- New York P. J. Chapman (June 9): This pest appeared in large numbers on apple hawthorn at LeRoy.

STATE OF NEW YORK
IN SENATE
January 12, 1892.

REPORT OF THE
COMMISSIONER OF THE LAND OFFICE

FOR THE YEAR 1891.

ALBANY: J. B. LIPPINCOTT & CO.,
PRINTERS, 1892.

THE COMMISSIONER OF THE LAND OFFICE,
ALBANY, N. Y.

ALBANY, N. Y., JANUARY 12, 1892.

TO THE SENATE,

IN SENATE,

ALBANY, N. Y.,

1892.

C. B. Raymond (June 21): This beetle is doing considerable damage in one community in Allegany County and beetles are present in numbers.

IRIS BORER (Macronoctua onusta Grote)

New York C. R. Crosby (June 20): Severe injury is reported to iris at Schenectady.

PALMETTO LEAF-MINER (Hemaledra sabalella Chamb.)

Louisiana T. H. Jones (June 11): The county agent from Hammond sent in leaves injured by larvae, as well as larvae, pupae, and adults, with the statement that the larvae were "doing considerable damage" to the leaves of large Phoenix palms in a yard at this place.

(Aphidae)

Georgia W. F. Turner (June 23): There is an aphid on crepe myrtle that is extremely serious this year. I do not recognize the species. It is very abundant at Fort Valley.

SPINDLEWORM (Achatodes zeae L.)

Maine E. M. Patch (June 16): This is a "new pest" at Auburn, attacking "Golden elder" — Saxifraga. Larvae are about full-fed.

BLACK VINE WEEVIL (Brachyrhinus sulcatus Fab.)

New York M. D. Leonard (June 8): Grubs are seriously injuring the growth of many nursery trees at Westbury, L. I., and attacking yew trees, Taxus cuspidata. There are more than ever before. Grubs, pupae, and recently emerged beetles have been sent to this office.

H. C. Hockett (June 14): This weevil is injurious to Taxus in nurseries in Suffolk County.

New Jersey H. B. Weiss (May 25): Larvae are doing considerable damage to Taxus roots in a nursery at Paterson.

INSECTS AFFECTING MAN

AND DOMESTIC ANIMALS

MAN

MOSQUITOES (Culicidae)

Massachusetts A. I. Bourne (June 23): Mosquitoes at East Wareham are very slow in becoming abundant this season, owing doubtless to the unusually dry weather prevailing throughout most of May.

The first of these is the fact that the
government has been unable to raise the
necessary funds to meet its obligations.

The second is the fact that the
government has been unable to raise the
necessary funds to meet its obligations.

The third is the fact that the
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necessary funds to meet its obligations.

THE END

The first of these is the fact that the
government has been unable to raise the
necessary funds to meet its obligations.

Georgia Oliver I. Snapp (June 20): Mosquitoes are unusually abundant in middle Georgia this year. The exceedingly rainy May facilitated materially the development of this troublesome pest.

A DEERFLY (Chrysops carbonarius Walk.)

York M. D. Leonard (May 25): This insect is scarce, only one specimen having been taken in each place in locations where there should have been quite a few had they been at all numerous.

Maryland J. A. Hyslop (June 22): Chrysops vittatus Wied. is more numerous in southern Montgomery County than it has been in the past five years.

FLEAS (Siphonaptera)

Indiana J. J. Davis (June 15): Reports of fleas in barns and dwellings are coming in. The last few years we have had more than the usual amount of trouble from fleas.

HUMAN FLEA (Pulex irritans L.)

Ohio T. H. Parks (June 23): This species was received from a correspondent who reports the home overrun with them.

STRAW-ITCH MITE (Pediculoides ventricosus Newport)

Virginia L. A. Stearns (June 21): After 1922 wheat hauled from Montgomery County, Md., to Leesburg, Va., for milling had been run through the fan, employees complained of serious skin eruptions. The lesions were small, thickly placed over the back to the waistline and scattered over arms. Medical attendance was necessary. Customers at the mill complain of itching and slight eruption. Insect hosts of the mite as affecting wheat were rather more common than usual in this region in 1922.

CATTLE

HOUSEFLIES (Musca domestica L.)

Louisiana T. H. Jones (June 15): The common housefly is reported to be unusually abundant about dairy barns in various parts of the State.

SCREWORM (Chrysomya macellaria Fab.)

New York R. M. Wells (June 19): The earliest appearance this year at Orange County of screwworm was reported this date.

Texas D. C. Parman (June 21): Flies are few in number for June. A slight increase of "worms" myiasis is noted in livestock. There are fewer cases in the plateau region.

Received of the Treasurer of the County of ... the sum of ... Dollars for ...

County of ... State of ...

Know all men by these presents, that I, the undersigned, for and in behalf of the ...

do hereby certify that the within and foregoing is a true and correct copy of the ...

Witness my hand and seal this ... day of ... 1891

Attest: My hand and seal this ... day of ... 1891

County of ... State of ...

Know all men by these presents, that I, the undersigned, for and in behalf of the ...

do hereby certify that the within and foregoing is a true and correct copy of the ...

Witness my hand and seal this ... day of ... 1891

County of ... State of ...

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Know all men by these presents, that I, the undersigned, for and in behalf of the ...

do hereby certify that the within and foregoing is a true and correct copy of the ...

County of ... State of ...

HORNFLY (Haematobia irritans L.)

Mississippi T. H. Jones (May 25): The hornfly appears to be unusually abundant this year; they have been abundant at the L. S. U. Dairy Farm during late May and early June, and were reported as very abundant at a dairy at Zachary on June 8. They were noted as very abundant on cattle being driven over the roads of East Baton Rouge Parish on June 8, and C. H. Staples, Professor of Dairying at L. S. U., states that they are unusually abundant at dairies he has visited in the State. W. G. Bradley, Assistant Entomologist of the Experiment Station, reports having found the hornfly very abundant while on a trip to Cameron Parish, they being as numerous on horses as they ordinarily are on cattle.

POULTRY

ROSE CHAFER (Macrodactylus subspinosus Fab.)

Pennsylvania Norman Bailey (June 13): The rose chafer is reported as "eating all fruits, blossoms, shrubbery, and roses," and chickens and turkeys are eating so many of them that they are killing the poultry.

Mississippi J. J. Davis (June 15): Rose beetles are causing the death of large numbers of young chicks in southern Indiana. Definite reports have been received from Williams in Lawrence County and from Corydon. In some cases they were killing 12 a day, all chicks fatally affected being 6 weeks old or younger.

CHICKEN MITE (Dermanyssus gallinae Redi.)

Mississippi O. G. Babcock (June 20): The chicken mite has been very bad during June in practically all poultry houses where treatment was neglected. Baby chicks were killed and hens driven from nests.

MITES

Mississippi J. J. Davis (June 15): On June 11, head lice, feather and depluming mites of poultry have occasioned a number of inquiries from various parts of the State.

INSECTS INFESTING HOUSES AND PREMISES

ANTS (Formicidae)

Mississippi M. R. Smith (June 22): T. F. McGehee recently sent to this office a number of specimens of the tiny thief ant, Solenopsis molesta Say, which he states were present in a box among crackers. This species is occasionally found in houses in Mississippi, but it is never as numerous or troublesome as Pharaoh's ant, which it to some extent resembles.

M. R. Smith (June 22): Tapinoma sessile. Say has been reported by T. F. McGehee to be unusually numerous and troublesome in the kitchen of a house at Holly Springs. This is the first report we have of this species invading houses.

Indiana J. J. Davis (June 15): Ants, particularly ants in lawns and gardens, have been unusually troublesome the past month.

ARGENTINE ANT (Iridomyrmex humilis Mayr.)

Alabama Neale F. Howard (June 11): The Argentine ant is causing considerable annoyance in the city of Birmingham, and many inquiries are made of the Bureau laboratory for control measures.

California W. D. Pierce (May 31): The Argentine ant is very bad around the entire Bay region, especially at Oakland, Alameda, San Francisco, San Mateo, and Palo Alto.

ROUNDHEADED BORERS (Phymatodes testaceus L. and P. variabilis L.)

New York M. D. Leonard (May 24): Specimens have been received in the office with the statement that they were present in several houses and causing annoyance because of their numbers. (They probably come from an oak wood pile nearby).

BOOK-LICE (Atropos divinatoria Muell.)

Texas O. G. Babcock (May 9): A five-pound lard bucket that was washed last fall and contained about a pound of hominy flakes was found to be heavily infested with book-lice. It was noticed that these insects were among the hominy and not upon the lid where there was the trace of lard. This is the first case of the kind noticed during the three years at Sonora.

TERMITES (Reticulitermes flavipes Kol.)

Illinois W. P. Flint (May 18): Termites have been very abundant in Illinois this season, and many reports of damage to buildings, both in the country and in town, are being received.

POWDER-POST BEETLES (Lyctus linearis Goeze)

Indiana J. J. Davis (June 15): Powder-post beetles (Lyctus striatus Melsh. Stirrett det.) have been reported attacking woodwork in several dwellings at Decatur.

NAKED SLUGS (Agriolimax sp.)

Indiana J. J. Davis (June 15): Naked slugs have been reported as annoying in the cellar of a house in La Fayette. Last year these slugs were very annoying in La Fayette.



ST O R E D - P R O D U C T I N S E C T S

STORED GRAIN PESTS

Nebraska M. H. Swenk (June 15): During the second week in June renewed inquiry concerning injuries by stored grain pests in wheat began to be received. The number of these reports is quite normal, however, as it has been for the past several months.

BEAN WEEVIL (Mylabris obtectus Say)

Pennsylvania C. R. Crosby (May 28): Lima beans are seriously injured; specimens have been received from Warren.

PEA WEEVIL (Bruchus pisorum L.)

New York P. J. Chapman (June 15): The pea weevil is common in seed peas, 25 per cent in some at Genesee County.

CONFUSED FLOUR BEETLE (Tribolium confusum Duv.)

Hawaii Claude Wakeland (May 28): This beetle was reported as very numerous in an old building containing grain, at McCammon.

LARDER BEETLE (Dermestes lardarius L.)

New York C. R. Crosby (May 22): Smoked meat is badly infested at Amenia.



THE INSECT PEST SURVEY BULLETIN

A periodical review of entomological conditions throughout the United States,
issued on the first of each month from April to November, inclusive

Volume 3

August 1, 1923

Number 5

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

OUTSTANDING ENTOMOLOGICAL FEATURES IN THE UNITED STATES FOR JULY, 1923.

The very unusual insect conditions recorded last month continued through July.

Grasshoppers are still attracting major attention throughout the Mississippi Valley and the Rocky Mountain and the Pacific Coast regions, the trouble extending into the Ohio River Basin and the Great Lakes region. In addition to the States reported as being seriously infested with grasshoppers during June, Indiana, South Dakota, Montana, Minnesota, and Nevada were reported in July. In addition to the grasshopper troubles, Utah reports a serious outlook for trouble with the Mormon cricket in the Uinta Valley, one band of these hoppers being 3 miles wide and several times as long.

The alfalfa weevil is established in Sierra County, California.

The Hessian fly infestation throughout the Middle Atlantic States and the Ohio Basin continues below normal, except in New York State, while in the Upper Mississippi Valley the situation is reported as serious in Wisconsin, Missouri, Nebraska, Kansas, and Iowa, and the pest is apparently on the increase in Minnesota and North Dakota.

The greater wheat-stem maggot is materially affecting the crop in Missouri, North Dakota, Nebraska, and Oregon.

The chinch bug infestation is now becoming serious north of the region reported last month. Reports of infestations are coming from southern Michigan, southeastern Iowa, and South Dakota. In Missouri calcium cyanid is proving an excellent material for use in chinch bug barriers.

The stalk borer is rather generally reported from New England, the Middle Atlantic States, the Ohio River Valley, westward to South Dakota, and southward to Missouri.

The garden webworm, both as a truck and as a field crop pest, is reported from Missouri and Kansas. In Kansas some farmers report a total loss of the second cutting of alfalfa.

The apple tent caterpillar was generally abundant over New England and the Middle Atlantic States, with severe infestations also reported from Wisconsin.

An interesting note has been received from Michigan to the effect that the anthicid beetle Notoxus talpa has been riddling the fruit of sweet cherries at Niles.

The rose chafer is epidemic throughout New England and the Middle Atlantic States, south to Virginia and through the Ohio River Valley, and northward to Michigan, while the southwestern species, Macroductylus uniformis, is reported as very abundant in Dona Ana County, New Mexico.

Scutellista cyanea has been discovered in New Orleans feeding on the black scale. This parasite was sent to Dr. H. A. Morgan, then located at Baton Rouge, in 1898 by Doctor Howard. There is no record, however, of its having been taken in the field in Louisiana until the present discovery. It is possible that its occurrence here is due to this introduction.

The sweet potato weevil is now authentically reported from Stephens County, Okla., where larvae were collected early in June.

The Mexican bean beetle is apparently spreading more rapidly than last year in South Carolina, and is now well established over central Tennessee and Kentucky. The last report placed the insect very near the Ohio line.

Wireworms are very seriously infesting onions in the northeastern part of Indiana, where a company reported losses amounting to from \$15,000 to \$20,000.

The July 20 survey of the cotton boll weevil is contained in this number, the pest having been observed over practically the entire Cotton Belt during July.

The cotton worm was observed on July 6 at Baton Rouge, La., where mature larvae were collected. It appeared in Hidalgo County, Tex., as early as June 10, and by July 14 an outbreak extended from Brownsville along the coast as far as Liberty County and inland to the main line of the Southern Pacific Railway. By July 20 leafworms were collected at Forest City, Ark.

The dandelion root aphid is reported as attacking a number of ornamental plants in Indiana and Tennessee, and the iris borer is generally abundant from Maine to Pennsylvania and New Jersey.

A new pest is recorded in this number. The European weevil Phyllobius oblongus, known as a pest to apple buds in England, has been found rather numerous on elms in the city parks in Rochester, N. Y.

The arborvitae leaf-miner and the elm spanworm are both recorded as prominent at several points of the northeastern part of the United States.

A geometrid moth, Eulypa hastata, is occurring in enormous swarms over Maine and northern New Hampshire.



OUTSTANDING ENTOMOLOGICAL FEATURES IN CANADA FOR JULY, 1923.

The rose chafer is present in great numbers and represents as severe an outbreak as has ever occurred in southwestern Ontario. The main centers of infestation are Middlesex, Elgin, Norfolk, Welland, Peel, and York Counties, but it occurs wherever the soil is light and sandy. The fruit of cherries, peaches, apples, pears, plums, and ornamental plants have been freely fed upon by adults.

The apple seed chalcid has been reared from apple seed at Kelowna in the Okanagan Valley, B. C.

The clover-seed chalcid has been found at Lethbridge, Alberta, in the blossoms of alfalfa.

The spring cankerworm has been present in outbreak form in Welland, Norfolk, Northumberland, and Durham Counties of Ontario during the season.

The chinch bug has been found in destructive numbers in a small area 50 miles southwest of Rosetown, Saskatchewan. This outbreak is in an isolated locality 135 miles north of the international boundary and north of the South Saskatchewan River and is of special interest as one of the first records of this species in the Prairie Provinces in destructive abundance. Edges of several fields of early-planted spring wheat adjoining prairie land have been invaded.

Grasshoppers have been particularly numerous in many parts of western Canada. The most severe outbreaks are occurring in southern Saskatchewan, Alberta, and British Columbia. Neotoma stans and M. bivittatus are the species at fault in each of the localities. A general absence of Acrida pellucida is everywhere noted. A notable outbreak of M. packardii is associated with the lesser migratory grasshopper in the southern Okanagan Valley of British Columbia. Here these two species have defoliated young apple trees and small bull pines, and intercrops of vetch and alfalfa have been eaten to the ground.

The forest tent-caterpillar has been very conspicuous in New Brunswick. Caterpillars have been sufficiently numerous to hinder railway trains at several points.

Moths of Eulyca hastata Linn. were very numerous at a number of points in southern Quebec and northern Ontario during early July.

The stalk borer has been reported and submitted for identification on many occasions during the past month at points in the neighborhood of Ottawa, Ontario.

Notable injury has been caused by the iris borer, Macronoctua onusta Grt., at Toronto, Ottawa, and Montreal.

THE HISTORY OF THE
CITY OF BOSTON

From its first settlement in 1630 to the present time
the city has grown from a small fishing village to one of the
largest and most important in the world. The early years were
marked by hardship and struggle, but the spirit of enterprise and
industry which characterized the first settlers has been passed on
to the generations that have followed. The city has been the scene
of many important events in the history of the United States,
and its people have played a prominent part in the development
of the nation. The city is now one of the most beautiful and
prosperous in the world, and its future is bright and promising.

CEREAL AND FORAGE-CROP INSECTS

MISCELLANEOUS FEEDERS

GRASSHOPPERS (Acridiidae)

- Indiana J. J. Davis (July 16): Grasshoppers are more abundant this year than for several years past and, though not in destructive numbers at present, indicate probable trouble in a year or two.
- Wisconsin E. G. Bailey (June 20): Grasshoppers are very serious in localized regions, particularly throughout the northeastern counties.
- Minnesota A. G. Ruggles (July 29): Grasshoppers, Camnula pellucida, have been very busy in the northern half of the State and we have been trying out Kansas, Montana, and Canadian methods of control. We have had numerous reports of grasshoppers in other parts of the State, one right here in Hennipen County being M. bivittatus. Alfalfa and bean fields are being entirely wiped out.
- North Dakota R. L. Webster (July 5): County agents in four of the northwestern and north-central counties report damage by grasshoppers in this week's rye and wheat crop report.
- South Dakota A. L. Ford and H. C. Severin (July 16): Grasshoppers are appearing in the Black Hills country in damaging numbers. The predominating species is Melanoplus bivittatus Say, while there are more Camnula pellucida Scudd. than there have been for several years. We do not expect the damage from this pest that we have had during the past three years.
- Kansas Roger C. Smith (June 26): Melanoplus bivittatus and M. differentialis Thomas nymphs of about the third instar are far more abundant than during average years. There are also quite a few tettigoniids in the outbreak.
- Texas O. G. Babcock (June 21): A general increase of lubber grasshoppers (Dictyophorus sp.) is recorded from Uvalde, Rock Springs, Sonora, El Dorado, and San Angelo. At present they are in practically all canyons over this region and are now ovipositing.
- C. H. Gable (July 10): The situation in Mason and Llano Counties and isolated areas in northern Gillespie County is serious. They are having a real outbreak. The differentialis grasshopper seems to be the chief offender. In Mason and Llano Counties only about 10 per cent of the land is under cultivation. Pastures showed an estimated infestation of from 5 to 8 hoppers per square yard.

- Montana R. A. Cooley (June 27): A communication has been received from Liberty County that "every inch of country is covered with hoppers. This county seems to be the worst grasshopper spot on the map, and farmers are in a bad way financially."
- Utah I. M. Hawley (June 23): Several species of grasshoppers are doing considerable damage in northeastern Utah and Millard County in western Utah. The demand for amyl acetate has been so great that it is now almost impossible to get it, even at \$5.50 and \$6 a gallon. Sodium arsenate in the bait is giving good control in most places. A few growers in the Uinta Basin are using hopperdozers.
- Stewart Lockwood (July 20): I have just returned to Billings from the Uinta Basin in Utah. The grasshopper doing the damage is M. bivittatus, though there were some atlantis Riley, femor-rubrum DeGeer and packardii Scudd. I found that for the most part the cropped land was not heavily infested with grasshoppers but that there were several rather large sections where M. bivittatus had done all the damage it could. Several large fields of alfalfa were totally destroyed, nothing being left but the coarser stalks. Few parasites were found. From conversations with farmers it would seem that they have witnessed a typical increase in the population of this particular species of grasshopper, i. e., for several years grasshoppers have not been a great factor with the farmers, but last year many fields were slightly damaged and some were destroyed. This year the localities where there were grasshoppers last year are now overrun and many more fields have been damaged to a considerable degree. At the time I was there many of the females were about to deposit their eggs, and it is probable that some had already done this.
- Nevada C. M. Packard (June 25): Hoppers are still small and exceedingly abundant in colonies covering from 5 to 20 acres in Elko County. Cold weather has prevented damage to date, but with warm weather serious injury to all crops seems inevitable.
- Oregon L. P. Rockwood (June 12): Practically all the damage being done in Lake and Klamath Counties can be attributed to Carnula pellucida. These hoppers usually oviposit on slight ridges and knolls in the otherwise poorly irrigated area. Reclamations have materially increased the area in which hoppers oviposit. The trouble has been practically continuous for five or six years and seems to be increasing in severity. Stockmen have been compelled to drive stock out of their pastures when they should have been at their best and, in many cases last year, cattle died of starvation on the way to distant mountain ranges. The areas of egg laying are comparatively small and this gregarious habit should be taken advantage of in controlling this pest.

California C. M. Packard (June 11): Grasshoppers are destructively abundant in many of the mountain valleys in Modoc and Siskiyou Counties. Systematic control measures are already under way in Modoc County, where good results are being obtained with the usual poisoned bran bait. The Reclamation Service set aside \$5,000 for the use of settlers in the region around Tule Lake for fighting grasshoppers. Modoc County also furnished the services of five men to assist in mixing and applying poisons. An interesting machine was devised under the direction of the Reclamation Service, consisting of hose and burners to which distillate oil under pressure was conveyed, the whole apparatus being mounted on a truck. About ten acres should be covered at a cost of about \$1 per acre. Practically all of the immature hoppers were killed by this treatment. The truck was driven forward slowly, with two men on foot, one man handling each burner, and each man covering a swath 30 feet wide.

California Weekly News Letter, Vol. 5, No. 14 (July 14): A heavy infestation of grasshoppers is reported from Yolo County. In the control work in this outbreak 5 barrels of molasses, 700 pounds of Paris green, and 250 dozen lemons were used. Hoppers are now fairly well under control, but the cold weather has held back emergence, so that there will probably be heavy control work for the next two or three weeks.

MORMON CRICKET (Anabrus simplex Hald.)

Utah Stewart Lockwood (July 20): Mormon crickets are not in the Uinta valley to any degree as yet but I found them in large numbers on the top of Diamond Mountain, which is a high mesa about 2,000 feet above the floor of the valley. During the trip many bands of crickets were observed, some of them several miles long. One in particular was 3 miles wide and several times as long. All of them were traveling, though each band seemed to be going in a different direction from others. At the end of the trip I could see 75 per cent of the cropped land was very heavily infested, 20 per cent of the grazing land was full of crickets, and the rest had from now and then one to four and five to the square foot. Most of the damage I saw was done to native grasses.

CUTWORMS (Noctuidae)

Wisconsin E. L. Chambers (June 20): Cutworms are damaging corn in 10 counties throughout northeastern and southwestern Wisconsin.

Nebraska M. H. Swenk (June 15-July 1): During the period covered by this report the variegated cutworm, Lycophotia margaritosa Haw., was numerous, but not enough so to be injurious.

Utah I. M. Hawley (June 15): Corn is being injured by several species of cutworms, with a loss of about 25 per cent in some fields near Cedar City.

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry must be supported by a valid receipt or invoice. The second part outlines the procedures for handling discrepancies between the books and the actual cash on hand. It states that any variance must be investigated immediately and reported to the management.

The third section describes the process for reconciling the bank statements with the company's records. It requires that the reconciliation be performed monthly and that any differences be explained. The fourth part discusses the need for regular audits to ensure the integrity of the financial data.

The fifth section details the controls in place to prevent fraud and misappropriation of funds. It includes a strict policy on the use of company assets and a requirement for dual authorization for all significant transactions. The sixth part covers the reporting requirements for the financial statements, including the preparation of the income statement, balance sheet, and cash flow statement.

The final section provides a summary of the key points discussed in the document. It reiterates the commitment to transparency and accuracy in all financial reporting. The document concludes with a statement of approval from the management and a date.

WHITE GRUBS (Phyllophaga spp.)

Michigan R. H. Pettit (June 1): I received today a few dozen samples of Lachnosterna, which is reported from Alamo, in Kalamazoo County, as having defoliated butternut and walnut trees. It is also reported as working on maples to a less extent.

Illiana J. J. Davis (July 16): The species involved in the reported hickory defoliation at Connersville on June 11 (see Vol. 3, No. 4, Insect Pest Survey Bulletin, July 1, p. 155) are principally Lachnosterna hirticula Knoch with occasional specimens of gibbosa Burm., fusca Froel., and ilicis Knoch.

WHEAT

HESSIAN FLY (Phytophaga destructor Say)

New York W. R. Walton (July 30): Professor Crosby reports that partial count indicates that Hessian fly is worse in western New York than last year.

Maryland P. R. Myers (July 19): The average spring infestation of our plats at Cambridge has dropped from 71 per cent last summer to 6 per cent this summer. This large decrease in infestation is probably due mainly to two factors; first, the protracted emergence of the Hessian fly last fall, in which about 12 per cent of the larvae hatching from late-laid eggs failed to mature; second, the generally late sowing of wheat last fall throughout the East on account of the drought.

Virginia P. R. Myers (July 19): The average infestation of the Hessian fly in the plats located at Warrenton is 4 per cent less this summer than it was last summer.

Ohio T. H. Parks (July 19): A wheat insect survey in 32 counties shows no serious damage anywhere. The State average infestation of straws is 4.4 per cent, compared with 10.9 per cent one year ago. In 10 northwestern counties only 9 early-sowed fields were found. These averaged 44 per cent infestation, with one field 94 per cent. The average of 81 fields sowed after the safe dates in 10 northwestern counties was 3.9 per cent of straws infested. The northern half of the State has 6.4 per cent infestation while the southern half has only 0.6 of 1 per cent. No damage is expected this fall.

Wisconsin Emil Swain (July): This pest caused almost a total loss in the vicinity of Osseo, in Trempealeau County.

Minnesota A. E. Ruggles (July 23): The Hessian fly is becoming well established in certain sections where winter wheat is being grown.

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- Iowa F. D. Butcher (July 24): We examined 30 fields in Page County and easily found the fly in all of them. The damage varies, but averages from 3 to 5 bushels per acre for the county. The total loss is from \$100,000 to \$125,000 on 35,000 acres.
- Missouri L. Haseman (June 27): Reports of serious damage from the Hessian fly have been received from Buchanan County and that vicinity. (July): Stubble records from experimental plots over the State show that the Hessian fly is very abundant and certain to seriously affect the next crop if thorough and concerted efforts at control are neglected. The fly is "coming back" stronger in the southern and northern portions of the State and is less abundant in the central part.
- North Dakota C. N. Ainslie (June 26): There is considerable infestation in Golden Valley County by the spring brood of larvae. Excess moisture in June may cause a partial summer generation that will injure grain just above the joints.
- Nebraska M. H. Swenk (June 15-July 1): During the last two weeks in June the Hessian fly infestation was somewhat more general than was realized on June 15 over the portion of southeastern Nebraska lying west of Cass, Otoe, Nemaha, Richardson, Johnson, and Pawnee Counties. Saunders, Dodge, and Butler Counties seem to be very generally infested, a condition which extends less intensely west to Merrick County, in the general region of the lower Platte Valley. Westwardly along the Kansas border the infestation extends to Red Willow County, Furnas County being very generally infested. However, owing to the excellent growing conditions for the wheat, the loss apparently will be much less than it threatened to be.
- Kansas J. W. McColloch (July 10): Out of 606 crop reporters, 320 reported fly damage on June 16. Infestations are located generally throughout the State. These reports coincide with our surveys, and we have every reason to believe that the data furnish a good idea of the distribution. The spring was cool, with excessive rainfall. (July 11): The second spring brood of the Hessian fly was especially large and caused much fallen wheat at harvest time. The present indications are that the fly will be one of our major problems throughout the remainder of the year. The State has been amply supplied with moisture this year, which again is ideal for the development of the fly.

GREATER WHEAT-STEM MAGGOT (Meromyza americana Fitch)

- Missouri L. Haseman (July): In some fields this spring as much as 25 per cent of the wheat heads were killed by this pest. The infestations were local mostly in the western half of the State.
- North Dakota R. L. Webster (July 3): Infestations in Cass and Richland Counties are causing "white heads" in wheat and other small grains. There is the usual amount of damage.



Nebraska M. H. Swenk (June 15-July 1): There has been considerable comment concerning the rather large number of whitened heads of wheat destroyed by this pest in some of the eastern counties of the State. This has been particularly true in Saunders County, where a large number of fields are reported as more or less infested. One case of infestation in that county estimated 50 per cent of the heads of wheat in the field whitened, but, as a rule, the damage is small. Lancaster and Colfax Counties report frequent but scattering infestations with this pest. The reports were received from June 16 to 28.

Oregon L. P. Rockwood (June 23): Early-sown spring grain on hill lands in Scoggins Valley show ragged appearance and a small number of good heads because of injury by these insects combined with rust and some Hessian fly. Conservatively estimated, the least damage by these insects is a toll of 20 per cent of possible heads of wheat. The acreage affected is probably not large. From 15 to 20 acres have been seen so far. Some of the injury has also been caused by Meromyza nigriventris.

WHEAT JOINTWORM (Harmolita tritici Fitch)

Maryland P. R. Myers (July 19): There has been an average increase of nearly 1 per cent in the infestation of this insect in our plats at Cambridge.

Ohio T. H. Parks (July): The wheat jointworm has not damaged wheat in any county. Less than 1 per cent of the straws were affected in 30 of the 32 counties visited on the wheat insect survey. The pest is not increasing.

Indiana J. J. Davis (July 16): This pest is more abundant this year than for a number of years, particularly in the southern half of the State.

Missouri L. Haseman (June 27): Many samples of injury from jointworms have been received during the past week. The samples coming in have been from Texas County and that part of the State. I do not think the insect will prove as abundant as in some years. (July): This pest seems unusually abundant this year. It is most abundant from the Missouri River south over the eastern half of the State. However, some severe infestations have been found north of the Missouri River.

WHEAT-SHEATH GALL JOINTWORM (Harmolita vaginicola Doane)

Ohio T. H. Parks (July 19): This pest is now present in injurious numbers on wheat sown very late in the eastern half of the State and also in the southern and southwestern counties. The pest is on the increase in this area. It has not been found in the northwestern or central western counties.

FALSE WIREWORM (Eleodes spp.)

Colorado C. P. Gillette (July 18): Fewer complaints concerning false wireworms have been received this year so far than during the two preceding years. However, several complaints have come to this office from Logan County through the county extension agent. Through him we have arranged some cooperative work on these worms.

BLACK GRAIN-STEM SAWFLY (Trachelus tabidus Fabr.)

Maryland P. R. Myers (July 19): An examination of material from our plats at Cambridge shows an increase of nearly 2 per cent in the infestation by this insect this summer.

Virginia P. R. Myers (July 19): There has been an increase of nearly 1 per cent in the infestation by this insect in our plats at Warrenton.

ENGLISH GRAIN APHID (Macrosiphum granarium Kirby)

Nebraska M. H. Swenk (July 1): Not since 1899 have there been so many complaints of an abundance of the English grain aphid on the wheat heads in southeastern Nebraska as there have been this spring.

CORN

CHINCH BUG (Blissus leucopterus Say)

Michigan R. H. Pettit (July 19): We had the first report of the chinch bug in this State this morning. It came from Union City, Branch County, where a cornfield is infested.

Ohio T. H. Parks (July 19): Our wheat insect survey revealed some bugs present in the wheat, but there has been no damage to wheat or corn in any county. The corn is already large and will not suffer under the attack of the few chinch bugs present.

Indiana J. J. Davis (July 16): Chinch bugs are abundant and causing injury in many sections of the State in the northern two-thirds. There are not as many reports to this office as last year. From reports the heaviest infestation occurs in White and Jasper Counties.

Iowa H. E. Jaques (July 11): The chinch bug is showing up rather seriously throughout southeastern Iowa and is doing considerable damage to wheat and corn and some of the other small grains. I have been working in some fields in Davis County, where rather heavy damage is being sustained.

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Fred D. Butcher (July 14): Chinch bugs have been migrating from small grain for 10 days. They are more severe over a larger area than last year. Lee, Des Moines, Van Buren, Henry, Davis, Wapello, and Lucas Counties report outbreaks.

Missouri L. Haseman (June 27): Complaints regarding the heavy infestation of chinch bugs throughout the State are received daily. I believe we will find that they are more abundant through the central counties and the northern counties of the State when the heaviest migration is on. Weather conditions in the past week have delayed migration practically two weeks. (July): Late spring delayed spring migration and breeding for about two weeks. Rains at wheat harvest (June 15-July 1) caused wild grasses to grow in stubble fields, which held up normal migration to corn. Bugs sifted over for about three weeks. In central Missouri the heaviest movement occurred between July 1 and July 10.

Calcium cyanid as a barrier gave excellent results. For the best results it is applied in the bottom of a furrow at the rate of 1 pound of flakes to from 60 to 100 feet of furrow. The heaviest movement of bugs occurs during the afternoon and the cyanid is applied when the movement becomes heavy around the noon hour. One application will hold the bugs for the rest of the day if the wind is not too strong. Such a barrier is not too expensive to maintain.

Since the bugs reached the corn we have dusted it with powdered calcium cyanid. This has caused some burning on the upper leaves of small corn and in the tassels, but not much on the lower blades or in the boots. With a knapsack duster it requires about 15 pounds of dust to do thorough work. When dust was used full strength it gave practically complete control. Very few that fall as dead ever recover. Some die so quickly they do not withdraw their beaks. The prolonged migration made it necessary to repeat the applications, and even after that a great many bugs are still present in the corn.

South Dakota A. L. Ford and H. C. Severin (July 13): The abundant rain this spring has held the bugs in check in most places. The rains were not general, and in those places where moisture is needed the bugs are doing much damage. Wheat and barley seem to be the only grains seriously affected. Corn which is adjacent to wheat and barley is suffering in places. At Geedes much barley and wheat has been ruined and farmers are burning it to protect near-by corn. Many farmers are using dust barriers to protect corn with success. The heavily infested localities are small in area, not being over more than 8 or 10 townships at the outside. This infestation seems to have been working north at the rate of about 30 miles a year, for the past three seasons.

Nebraska M. H. Swenk (June 15-July 1): The situation concerning the chinch bug has not materially changed since June 15.

The first part of the paper is devoted to a general discussion of the problem of the origin of life. It is shown that the problem is one of the most important and most difficult in the history of science. The author discusses the various theories of the origin of life, and shows that the most plausible is the theory of spontaneous generation.

The second part of the paper is devoted to a detailed discussion of the theory of spontaneous generation. It is shown that this theory is based on the fact that life is a complex of many different parts, and that these parts are all derived from a common ancestor. The author shows that this theory is supported by the evidence of the fossil record, and by the evidence of the distribution of life on the earth.

The third part of the paper is devoted to a discussion of the evidence of the fossil record. It is shown that the fossil record is a very important source of information about the history of life on the earth. The author discusses the various methods of dating fossils, and shows that the most reliable is the method of radiometric dating. The author also discusses the evidence of the distribution of life on the earth, and shows that this evidence is in good agreement with the theory of spontaneous generation.

The fourth part of the paper is devoted to a discussion of the evidence of the distribution of life on the earth. It is shown that the distribution of life on the earth is a very important source of information about the history of life on the earth. The author discusses the various methods of studying the distribution of life, and shows that the most reliable is the method of comparing the distribution of life in different parts of the world. The author also discusses the evidence of the distribution of life on the earth, and shows that this evidence is in good agreement with the theory of spontaneous generation.

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Kansas J. W. McColloch (July 20): Adults began to mature about July 14 and eggs are now being deposited. Chinch bugs are more abundant than in the average year with damage ranging from a few rows to as high as 30 acres. The weather has been warm with high rainfall. Fungus and egg parasites are still active.

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana T. W. Ingram (July 20): Sugar-cane moth borers are abundant in this section and are doing a large amount of damage to corn. In many cases they have completely destroyed the ear, and in some fields the tops of the stalks have broken and fallen as a result of the borers tunneling.

STALK BORER (Papaipema nitela Guen.)

Maine E. M. Patch (July 21): Frederick H. Jordan from South Portland reports "active in garden corn."

New Hampshire P. R. Lowry (July): This insect has been reported as injuring corn at Concord, Wilton, Gossville, and Winchester. It is somewhat more abundant than in an average year.

Massachusetts E. M. Patch (July 17): O. S. Morse writes from Medford Hillside: "I find them in tomato plants, rhubarb, golden glow, and dahlias." The sample sent was a larva of this species about half-grown.

Ohio T. H. Parks (July 19): This caterpillar is more abundant than in an average year and is still attracting attention as a corn pest, where it is being mistaken for the corn borer. Damage is scattered.

Indiana J. J. Davis (July 16): The stalk borer has been repeatedly reported from all sections of the State. Reports began June 26 and are continuing at the present time. Crops reported attacked are principally tomato, but also corn, wheat, and such flower garden plants as zinnia, Shasta daisy, rose, delphinium, and calendula.

South Dakota A. L. Ford and H. C. Severin (July 14): Damage is not serious, but oat fields show considerable damage through eastern South Dakota. This insect is more abundant than in the average year,

Missouri L. Haseman (July): This pest was very abundant and destructive a little earlier, and many complaints about it were answered.

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BILLBUGS (Sphenophorus spp.)

- Indiana J. J. Davis (July 16): The billbug injury at De Motte questionably attributed to Sphenophorus aequalis Gyll. has been investigated by C. R. Cleveland and the original tentative determination verified. Corn injury by billbugs was also reported on June 23 from Monticello.
- Wisconsin W. H. Eastman (June 23): Considerable damage is being done at Sparta, and in Buffalo, Monroe, and Sauk Counties.
- South Dakota A. L. Ford and H. C. Severin (July 5): Several reports with specimens have been received. Damage is not serious but unusual for this State. Infestations occur in Lincoln and McCook Counties. We had a wet spring but it has been dry for the last two or three weeks.

CORN-SILK BEETLE (Luperodes varicornis Lec.)

- Louisiana T. H. Jones (June 22): W. B. Wheelis wrote from Bogulsa on June 22: "There is a farmer who lives near the camp. He has a young field of corn with velvet beans planted in it. The corn is fine- in silk and tassel. The beans have just about reached the tops of the corn, and there are millions of these beetles feeding on the bean leaves and eating the fresh corn silks off; also they are in the tassel. The farmer is very much worried and they are really doing lots of damage." Adults accompanied the letter.

WIREWORMS (Elateridae)

- Connecticut W. E. Britton (July 6): Three fields are damaged, two only slightly in patches here and there, and one small field is 50 per cent destroyed at Woodbridge.

A CARABID (Bembidion quadrimaculatum L.)

- Maine G. A. Yeaton through E. M. Patch (June 29): We found hundreds of this little black insect. They were apparently feeding on the roots of the corn, because whenever we found a wilted stalk and dug into the soil they scurried in all directions. We could not find anything else around the roots.

ALFALFA AND CLOVER

ALFALFA WEEVIL (Phytonomus posticus Gyll.)

- Utah Geo. I. Reeves (June 25): The alfalfa weevil has neglected its duties somewhat this season. There has not been enough serious damage in Utah to provide material for control experiments. The injury became serious just at the last moment before cutting, having been retarded, as I believe, by the extremely cold weather. The extensions of the weevil territory are slight and do not involve any new counties.

California G. H. Hecke (Quar. Order 34, Amend. 5): "The fact has been determined that the alfalfa weevil exists in the County of Sierra."

ARMYWORM (Cirphis unipuncta Haw.)

Indiana H. F. Dietz (June 22): Armyworm moths are more numerous than in the last three years. They were first observed on June 15, and the abundance of adults may indicate an outbreak of this pest a little later.

J. J. Davis (July 16): Armyworms were sent in from Frankfort on June 23 with the report that they were damaging alfalfa. One Peridroma saucia Hbn. larva was with the several armyworms submitted, but, apparently, it was not responsible for the principal damage.

FALL ARMYWORM (Lathyrus frugiperda S. & A.)

South Carolina Philip Luginbill (June 28): Specimens of full-grown larvae were collected today at Columbia, which indicates that migrant moths must have reached this place about June 15 this year.

GARDEN WEBWORM (Loxostege similalis Guen.)

Iowa C. J. Drake (July 27): Garden webworm is reported from several places in the State as very seriously attacking alfalfa.

Missouri L. Haseman (July): This pest has just been reported from west-central Missouri in destructive numbers in alfalfa. The larvae are now nearly full-fed (July 20).

Kansas J. R. Horton (July 6): Young corn is 90 per cent destroyed, early-planted corn only about 10 per cent infested. It is also damaging canteloupes slightly; sweet potatoes severely; peas, beans, cucumbers, radishes, and even Irish potatoes and tomatoes more or less. Pigweed, and Amaranthus are almost destroyed in large patches and about seven other weeds are damaged. (July 17): The outbreaks in alfalfa extend over the entire area of Sedgwick County. They were first noticed about four days after my previous report on this pest. Much of the alfalfa has been cut in the last four or five days. Large numbers of Loxostege have now pupated in soil cells in this latitude. Injury is so severe that the fields have a whitish appearance from a distance, where the leaves are chewed full of holes and webbed together.

Geo. A. Dean (July 7): We have just received a report from Lyon County of the common garden webworm seriously injuring corn. The bottom or low lands of this county have been flooded, and I presume this may have something to do with the worms



moving from weeds and low-growing crops into the corn. However, it is nothing unusual in this State for the webworm to attack various crops.

Roger C. Smith (July 10): This pest has been reported from Manhattan. It is several times as plentiful as during the previous three years. Moths fly up in clouds. They are numerous at lights at night. In young growth of plants before blooming most of the longer stems contain a nest and larva. Larvae are nearly grown now. It is also reported on corn by correspondents. No natural enemies have been observed. Archytas analis Fab. are very plentiful and may parasitize them.

J. W. McColloch (July 12): Reports of injury by this pest have been received from Emporia and Beloit. In both cases the insects attacked pigweed in the field and after killing out these plants moved to the corn. (July 20): Infestations occur in eight counties in the northeastern part of the State. Abundance is much greater than in an average year. Some farmers report a total loss of the second cutting of alfalfa. The weather has been warm with high rainfall.

MEAL SNOUT-MOTH (Pyralis farinalis L.)

Kansas Roger C. Smith (June 26): Moths have been observed around the haystacks. Only a few larvae have been seen in old stacks. Most of the moths appear bright and newly emerged. There will probably be considerable damage by larvae later. Observations were made at Ashland ~~Brick~~, near Manhattan. They are far more plentiful than in an average year, probably three times normal. One to four moths flew up at each beating of the stack with a net. They were not observed at all last month.

SERPENTINE LEAF-MINER (Agromyza pusilla Meig.)

New Mexico R. Middlebrook (June 25): This pest is attacking a newly planted field of alfalfa, and attacks one variety more than another. Infestation occurs in Dona Ana County. This pest was not present to any extent last year. Its abundance has increased 50 per cent from last month.

NEMATODES

Colorado C. P. Gillette (July 18): I regret having to report a rather severe infestation of the alfalfa nematode in Fremont County, near Canon City. The county extension agent states that "in some instances whole stands and fields are being killed out." This is the first report of this pest in the State so far as I am aware.

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SOY BEANS

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata L.)

Indiana C. R. Cleveland (July 16): Diabrotica 12-punctata destroyed acres of soy beans planted in corn at Odell June 27. They completely destroyed plants. Damage was reported as severe last year as well as this.

A BLISTER BEETLE (Epicauta lemniscata Fab.)

Louisiana T. H. Jones: A correspondent from Iota complained of injury by "Spanish fly" to soy beans on June 13, probably referring to this species. Guy Fletcher, of the U. S. Bureau of Entomology, found adults numerous in a vegetable garden near Baton Rouge on June 22.

M I S C E L L A N E O U S

SORGHUM WEBWORM (Celama sorghiella Riley)

Indiana J. J. Davis (July 16): This pest was again reported damaging rye, this last report coming from Salem on June 16.

GRASS MITE (Pediculopsis graminum Reut.)

New York R. G. Palmer (July 7): Twenty per cent of the timothy heads in some fields are affected in Monroe County.

FRUIT INSECTS

APPLE

GREEN APPLE APHID (Aphis pomi DeG.)

- New York C. C. Wagoner (July 15): In Ulster County this insect is present on apple and pear terminals, in some cases requiring control but not in general.
- Indiana B. A. Porter (June 21): A severe outbreak of the green apple aphid is following on the heels of the rosy apple aphid infestation. In many of the young orchards growth has already been stopped. (July 21): This insect is reported as being much less abundant compared with last month. The severe infestation of about a month ago, at Vincennes, has about disappeared.
- Utah I. M. Hawley (June 15): This insect is found in small numbers on trees all over the State, but not in serious numbers.

ROSY APPLE APHID (Anuraphis roseus Baker)

- New York G. E. Smith (July 15): This aphid is causing considerable injury in many orchards in Orleans County.
- Indiana B. A. Porter (June 21): Serious damage has been done by this species throughout southern Indiana, both to foliage and to fruit. The greater portion of the aphids have now migrated from the apple.
- J. J. Davis (July 16): The rosy apple aphid has been more abundant and destructive this year, throughout the State, than for several years.

CODLING MOTH (Carpocapsa pomonella L.)

- Delaware J. F. Adams (July): Serious injury has been noted in several orchards in Sussex County.
- Virginia L. A. Stearns (July 17): Pupation and emergence of the first brood is about over. The maximum period of deposition for first-brood moths occurred from July 7 to 11. The first second-brood larvae left the fruit for cocooning on July 13, and cocooning is on the increase at the present time.
- Indiana B. A. Porter (July 5): The first second-brood moth emerged in the insectary today.
- J. J. Davis (July 16): The codling moth is very abundant in the State, all unsprayed trees being heavily infested.
- Missouri L. Haseman (July): The second brood of the codling moths appeared on the wing in central Missouri from July 5 to 15. In the southern part of the State they emerged a little earlier and to the north a little later.

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New Mexico R. Middlebrook (July 16): The codling moth is attacking apples throughout the entire State.

FRUIT-TREE LEAF-ROLLER (Cacoecia argyrospila Walker)

New York G. E. Smith (July 15): This insect is very plentiful in Orleans County this year.

Utah I. M. Hawley (June 13): The fruit-tree leaf-roller is very abundant in Cache and Utah Counties. It is more serious than it has been for several years. We counted 16 new egg masses on a limb 1 foot long.

TENT CATERPILLAR (Malacosoma americana Fab.)

New England and New York A. F. Burgess (June 30): Various reports from New England and New York show that the tent caterpillar was common and abundant over most of this area.

Connecticut E. M. Ives (June 22): Abundance compared with an average year is 1 per cent less, and none are to be found in dusted orchards.

New York G. M. Codding (May 29): The tent caterpillar is present throughout southern New York in larger numbers than have been known for a number of years.

New Jersey A. F. Burgess (June 23): New egg clusters are very common on wild cherry in the vicinity of Somerville on this date.

Wisconsin O. S. Soholt (June 20): At Washburn, infestation is severe in some areas.

Washington M. J. Forsell (July 7): This pest is very scarce this year in Snohomish County. The larvae were apparently parasitized, as they are hanging dead on the tents. Usually this pest strips all the native alders as well as apple orchards.

FALL WEBWORM (Hyphantria cunea Drury)

New York G. E. Smith (July 15): Not many are to be found in Orleans County, and they are of little account at the present time.

C. C. Wagoner (July 15): The fall webworm is rather general over Ulster County.

New Jersey A. F. Burgess (June 23): Small larvae of the first generation are common in the vicinity of Somerville on this date.

Delaware C. O. Houghton (June 25): Nests of this species are appearing in considerable numbers on fruit trees in this vicinity.

Georgia O. I. Snapp (July 11): This pest is very common on persimmon this year in middle Georgia.

Indiana J. J. Davis (July 16): The fall webworm has been abundant, especially in the southern half of the State. It is conspicuous both in cities and in the country, probably more so in cities.



THREE-CORNERED ALFALFA HOPPER (Stictocephala festina Say)

Utah I. M. Hawley (June 14): Tree hoppers are serious in young orchards and twigs of older trees where alfalfa or sweet clover is abundant. A dormant spray of miscible oil was effective in killing eggs.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

New York G. E. Smith (July 15): The San Jose scale is plentiful on fruit in neglected orchards in Orleans County.

Indiana B. A. Porter (June 2): At Vincennes the first crawling young were observed. (June 21): First-generation crawling young are present in large numbers. Where careless spraying was done, or where the dormant applications were omitted, the fruit is already badly spotted.

J. J. Davis (July 16): The San Jose scale continues as one of the biggest problems of the fruit grower. However, good control was obtained by the new lubricating-oil emulsion, applied during the dormant season, and satisfactory results are also being obtained with the summer applications of this emulsion.

Missouri L. Haseman (July): This pest has met a new check, lubricating-oil emulsion. Many Missouri growers used it in place of the lime-sulphur during the last dormant season. Generally good results are reported, but, like lime-sulphur, the spray kills only those actually hit by it. This pest also is behind its normal schedule, which will probably result in one less brood this year.

New Mexico R. Middlebrook (July): The San Jose scale is reported attacking fruit throughout this State, but pretty well controlled by spraying.

Washington E. J. Newcomer (June 23): Late applications of lime-sulphur do not appear to have been very effective this year. A period of warm weather from April 15 to 17 apparently started the scales growing, and they were largely able to overcome the effects of the spray applied about this time or later. In one case 18 per cent of the scale remained alive, and in another 32 per cent were alive, although the latter orchard was very thoroughly sprayed. Lubricating-oil emulsion killed 99 per cent at this same time.

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

New York R. E. Horsey (June 27): This insect was found on lilacs at Highland Park, but not numerous. Young were moving June 18 for the first time this year. Less than usual are to be found.

G. E. Smith (July 15): This scale is abundant in Orleans County in neglected orchards.

Indiana J. J. Davis (July 16): The oyster-shell scale continues as a big problem in the State. It is particularly destructive to lilac, cornus, and ash. Recently we observed it doing noticeable damage to walnut shade trees at Portland, and incrustated rose twigs were received recently from Veedersburg. Tests with summer sprays applied 10 days to two weeks after hatching gave good control.

THE HISTORY OF THE UNITED STATES

OF THE UNITED STATES OF AMERICA, FROM THE FIRST SETTLEMENTS TO THE PRESENT TIME.

CHAPTER I. THE FIRST SETTLEMENTS.

THE first settlements in the United States were made by the English, who came to the country in 1607.

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Caustic soda fish-oil soap 1 pound, nicotine sulphate 1 ounce, and water 5 gallons gave variable results, but in most cases practically 100 per cent kill. Two per cent lubricating-oil emulsion and Sun miscible oil (a new type of miscible oil) 1 to 40 gave practically 100 per cent control. In no case did the treatments injure foliage.

Colorado

C. P. Gillette (June 26): This insect has become rather abundant in sections of Denver and also in portions of the city of Fort Collins, where it is doing very serious damage, especially to the American ash, the purple lilac, and the Carolina poplar. I have been unable to find the scale upon apple trees or the white lilac bushes. The lice hatched this month in Fort Collins between the 18th and the 21st.

GIANT ROOT-BORER (Prionus laticollis Drury)

New Mexico

W. E. Emery (July 5): This insect is about 50 per cent more numerous than last year and in orchards inspected where this insect occurs there is from 25 to 50 per cent damage in Dona Ana County.

RED SPIDER (species unknown)

New York

W. H. Hart (June 23): This pest was first noticed in increasing numbers on foliage of susceptible varieties this week. It is more abundant on foliage of varieties free from downy covering.

CLOVER MITE (Bryobia praetiosa Koch)

Utah

I. M. Hawley (June 15): This mite is common on apples in many places, and in a few localities it is causing the leaves to turn yellow.

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

Delaware

J. F. Adams (May 25): In Camden this insect is numerous on pear trees. (July 5): In Dover one or more orchards are badly infested.

New York

G. E. Smith (July 15): The pear psylla is dangerously abundant in a few orchards in Orleans County, but most orchards are fairly clean.

PEAR-LEAF BLISTER-MITE (Eriophyes pyri Pgst.)

New York

C. C. Wagoner (July 15): In Ulster County these mites are found in goodly numbers in several orchards.

G. E. Smith (July 15): The pear psylla is very abundant in Orleans County in orchards near Holley and Medina. Increase is noted over the past season.

The first part of the paper is devoted to a general
discussion of the problem. It is shown that the
problem is equivalent to the problem of finding
the minimum of a certain function. This function
is then shown to be convex, and the minimum
is found by the method of steepest descent.

The second part of the paper is devoted to a
detailed discussion of the method of steepest
descent. It is shown that the method is very
efficient for finding the minimum of a convex
function. The method is then applied to the
problem of finding the minimum of a certain
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is very efficient for finding the minimum of a
convex function. The method is then applied to
the problem of finding the minimum of a certain
function. The results of the calculations are
given in the following table.

Utah I. M. Hawley (June 15): This pest is more abundant than last year in many places, but not very serious as yet.

PEACH

PEACH-TWIG BORER (Anarsia lineatella Zell.)

Maryland J. A. Hyslop (July 15): The peach-twig borer has infested from 80 to 100 per cent of the twigs in eastern Montgomery County.

California California Weekly News Letter, Vol. 5, No. 13 (June 30): A noticeable decrease in the prevalence of the peach-twig borer is noted in orchards in the Burbank and Lankershim districts of Los Angeles County, as a result of spray applications made last fall for this pest. Orchards which were badly infested last season show from 60 to 70 per cent decrease in infestation as compared with the previous year.

GREEN PEACH APHID (Myzus persicae Sulz.)

New York G. E. Smith (July 15): This aphid is found more generally than usual in Orleans County.

BLACK PEACH APHID (Anuraphis persicae-niger Smith)

California Roy E. Campbell (July 12): The black peach aphid is reported by horticultural inspectors to be particularly numerous this season in the San Fernando Valley. Growers are spraying with nicotine sulphate.

California Weekly News Letter, Vol. 5, No. 13 (June 30): J. B. Marleau, County Horticultural Inspector stationed at Glendale, reports that the black peach aphid is particularly numerous this season on orchards in Glendale, Burbank, and Lankershim districts.

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

New York G. E. Smith (July 15): This borer is destructive in Orleans County to trees injured by the peach-tree borer.

Pennsylvania S. W. Frost and E. M. Craighead (July): The fruit-tree bark-beetle, Scolytus rugulosus Ratz., is doing considerable damage to young cherry shoots in certain orchards in Adams County. The work of these beetles resembles the work of the oriental peach moth, but the cavities are much smaller. The injury thus far has been noted only on sweet cherry. This type of injury has previously been noted in literature but is not commonly found.

Alabama W. E. Hinds (June 30): Winter injury to pecans and young fruit trees was severe and is being followed by bark-beetles. These include the fruit-tree bark-beetles in peaches and a species in pecans.

CHERRY

PEAR AND CHERRY SAWFLY (Caliroa cerasi L.)

Indiana

B. A. Porter (June 7): This sawfly is defoliating cherry trees at Vincennes.

J. J. Davis (July 16): The cherry slug is abundant in some sections of the State, but is probably slightly less severe than a year ago.

BLACK CHERRY APHID (Myzus cerasi Fab.)

Indiana

H. F. Dietz (June 22): This species is very abundant on cherry.

Wisconsin

E. M. Squire (July 2): In Door County this insect is quite plentiful but not very serious.

Nebraska

M. H. Swenk (July 1): The last two weeks in June were characterized by an unusual abundance of aphids of several kinds. From north-eastern Nebraska, especially in Pierce and Boone Counties, the cherry aphid was reported doing injury during the third week in June.

AN ANTHICID BEETLE (Notoxus talpa Laf.)

Michigan

R. H. Pettit (June 28): I received word today from Niles, Mich., that a beetle, which Mr. Gentner identifies as Notoxus talpa Laf., has been riddling the fruit of sweet cherries and doing some injury to sour cherries. The owner states that it was necessary to pick the fruit of some trees in order to save it.

PLUM

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Maine

E. M. Patch (June 27): This insect is reported from Portland attacking Governor Wood cherry.

Connecticut

E. M. Ives (June 22): This insect is reported from Meriden attacking apples and plums, and more abundant than in an average year; frequent sprays or dustings a day or two apart have given some good results.

New York

G. E. Smith (July 15): In Orleans County this insect is bad near woods and in neglected orchards.

C. C. Wagoner (July 15): This insect is abundant in general in Ulster County.

Georgia

O. I. Snapp (July 16): No eggs of the second generation have been deposited to date, and it now appears as though the entire Georgia peach crop will move this year without injury from the second brood of curculio larvae. About 4,500 cars of peaches have been shipped to date from Georgia this year, and all of the crop has been remarkably free from "worms." The quality of the fruit this year is the best that has been grown in Georgia since 1918.

RASPBERRY

RED SPIDER (species undetermined)

Ohio E. W. Mendenhall (July 3): Several raspberry plantations are badly infested with red spider in the Dover district west of Cleveland. This pest is doing considerable damage to the leaves of the raspberries

BLACKBERRY

BLACKBERRY CROWN-BORER (Bembecia marginata Harr.)

Colorado C. P. Gillette (July 18): The blackberry crown-borer has recently been reported to this office by County Extension Agent George R. Smith as doing serious damage to raspberry and blackberry plants in Boulder County the past spring. So far as I am aware, this is the first record of this raspberry and blackberry pest inside the State of Colorado. The insect was in the chrysalis stage on July 17.

GRAPE

GRAPEVINE APHID (Macrosiphum illinoisensis Shimer)

Indiana H. F. Dietz (June 22): This species is very abundant on grape.

GRAPE ROOTWORM (Fidia viticida Walsh)

Ohio G. A. Runner (July): Adult beetles of the grape rootworm were abundant on grape foliage on this date.

ROSE CHAFER (Macrodactylus subspinosus Fab.)

Maine E. M. Patch (July 2): The rose chafer has been reported attacking cherry leaves, rose bushes, strawberry vines, and the leaves of young apple trees at Bowdoinham and Portland.

New Hampshire P. R. Lowry (July): The rose chafer has been much more common than usual this year, and considerable damage has been reported.

Connecticut G. V. Smith and E. M. White (July 5-13): Green clover heavily infested with rose-bugs, fed to milk cows, is cutting milk flow perceptibly, and the pests interfere with bee pasturage on sumac. Injured apple leaves are more numerous than usual.

New York C. R. Crosby and assistants: Rose beetles are very much more serious than normally throughout the State, doing serious damage to a great variety of fruit and ornamental plants. Plums and grapes in many cases are a total loss.

Pennsylvania C. A. Weigel (June 11): The rose chafer has been reported from Philadelphia, attacking peonies, roses, and sweet cherry trees.

Delaware C. O. Houghton (June): This insect was first observed on June 3. We have noticed serious injury to rose, plum, grape, and apple.



- Virginia C. A. Weigel (June 4): The rose chafer has been reported from Roanoke attacking flowers, shrubbery, peach, and apple trees.
- Ohio T. H. Parks (June 21): The rose chafer is more prevalent than for several years on cherry leaves, young corn, grapes, roses, strawberries, blackberries, raspberries, and lima beans.
- G. A. Runner (June 28): Vineyards on sandy soils were severely injured by rose chafers during the last two weeks in June in Lake and Ashtabula Counties. (July 15): Numerous reports from Sandusky, Ohio, were received of injury to apple. An orchard visited June 24 showed severe damage, the fruit on a number of trees on a sandy hillside being almost entirely destroyed.
- Indiana J. J. Davis (July 16): In addition to reports of last month, we have received reports of injury from all sections of the State, the crops injured including corn, apple fruit, and peony.
- Michigan R. H. Pettit (June 25): We are getting reports of serious attack on grapes, apples, peaches, and cherries by the common rose chafer, which seems to be worse this year than usual. The whole western fruit belt seems to be the seat of operations.

(MACRODACTYLUS UNIFORMIS HORN)

- New Mexico R. Middlebrook (July 15): This species has been reported from Grant and Dona Ana Counties attacking grapes. It is 50 per cent more abundant, compared with an average year, and 75 per cent more compared with last month.

GRAPE PLUME MOTH (Oxyptilus periscelidactylus Fitch)

- Massachusetts A. F. Burgess (June 30): This insect is reported as quite common on grape in several localities in eastern Massachusetts.

ERYTHRONEURA SP.

- Ohio G. A. Runner (July 2): Grape foliage in many vineyards on the Lake Erie Islands has been severely injured by adults of the overwintering brood of this species.

GRAPE FLEA-BEETLE (Haltica chalybea Ill.)

- New York G. E. Smith (July 15): The grape flea-beetle is abundant in one vineyard near Eagle Harbor in Orleans County.
- Delaware C. O. Houghton (June): This species is considerably more abundant than usual at Newark.

PRIMROSE ~~FLEA~~-BEETLE (Haltica foliacea Lec.)

- New Mexico R. Middlebrook (June): The primrose flea-beetle has been reported attacking grapes at Dona Ana, 10 per cent of the crop being damaged.

CURRENT

CURRENT APHID (Myzus ribis L.)

New York C. C. Wagoner (July 15): The current aphid is abundant in localized areas in Ulster County.

Indiana H. F. Dietz (June 22): This species is very abundant on current.

IMPORTED CURRENTWORM (Pteronidea ribesi Scop.)

New York C. C. Wagoner (July 15): This species is general and quite destructive in some patches in Ulster County.

Nebraska M. H. Swenk (July 1): Young larvae of the second brood of the imported currentworm were noted at work on currants during the last week in June.

PECAN

FALL WEBWORM (Hyphantria cunea Drury)

Georgia O. I. Snapp (July 11): The fall webworm appears to be more abundant on pecan trees this year than normally. Numerous colonies were observed on pecan trees today while riding through a section of middle Georgia.

Louisiana and Mississippi T. H. Jones (July 2): Indications are that the webworm, Hyphantria cunea Drury, is abundant in certain parts of northern Louisiana and is attracting attention especially because of its abundance on pecans. According to a newspaper report, Professor Harned reports the webworm abundant in parts of Mississippi.

APHIDIDAE (species undetermined)

Georgia O. I. Snapp (July 16): Aphids, the species of which I do not recognize, are very numerous on pecans here.

PECAN-NUT CASE-BEARER (Acrobasis hebescella Hulst)

Alabama W. E. Hinds (June 30): Case-bearers, especially the pecan-leaf case-bearer, seem to have been doing more damage than heretofore on pecans.

Louisiana T. H. Jones (June 27): Developing pecan nuts, apparently injured by larvae of this species, have been received from a correspondent.

CITRUS

BLACK SCALE (Saissetia oleae Bern.)

Louisiana T. H. Jones (June 1): At a meeting of the Louisiana Entomological Society on this date T. F. Catchings, of the U. S. Bureau of Entomology, reported the finding in New Orleans of what appeared to be Scutellista cyanea, feeding on the "black scale," Saissetia oleae. I have since

been informed by Ed. Foster that this identification has been verified. It is interesting to note that this is the parasite that, literature states, was sent to Dr. H. A. Morgan, then located at Baton Rouge, during 1898 by Dr. L. O. Howard. So far as known, there are no records of its being taken in the field in Louisiana until recently. It is possible that its occurrence here is due to the introduction in 1898.

TRUCK - CROP INSECTS

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

- New York G. E. Smith (July 15): This insect is reported from Orleans County as being bad in early plantings.
- Pennsylvania P. R. Myers (July 19): This insect is very abundant in Cumberland County, Pa., this year, and more farmers are spraying than ever before.
- Maryland W. White (July 30): This has been one of the most serious potato beetle years I have observed in eastern Maryland.
- Georgia O. I. Snapp (May 29): Potato beetles were present in destructive numbers on this date in a field where young tomato plants were growing. It was necessary to enforce control measures in this field.

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

- New York G. E. Smith (July 15): This insect is very destructive and abundant in Orleans County.
- North Dakota R. L. Webster (July 3): Foliage shows severe damage, and beetles are still abundant on this date.

POTATO LEAFHOPPER (Empoasca mali LeB.)

- Wisconsin J. E. Dudley, Jr. (July): This insect is reported from Dane County, attacking potatoes, probably more abundant at this time than in an average year. Its first appearance was observed about the middle of June, hopperburn also commencing to show up on early varieties.
- Iowa Fred D. Butcher (July 7): Injury is showing on early plantings, severe in the southern part of the State (Henry County), and just showing in northern Mitchell County.
- North Dakota R. L. Webster (July 3): The first adult leafhoppers were observed on potato foliage on this date. (July 18): Nymphs were first observed on potato foliage on this date, but no tipburn is yet evident at Fargo.

STALK BORER (Papaipema nitela Guen.)

Maine E. M. Patch (July 21): Frederick H. Jordan reports 10 per cent or more of his tomato plants riddled by them. He lately found them working in the potato tops.

SWEET-POTATO WEEVIL (Cylas formicarius Fab.)

Oklahoma E. E. Scholl (June 6): The larval stage of the sweet-potato weevil is present at Comanche, in Stephens County. These probably originated from slips grown at Harlingen, Tex.

CABBAGE

IMPORTED CABBAGEWORM (Pontia rapae L.)

New York G. E. Smith (July 15): This insect is attacking cabbage in Orleans County. Butterflies are plentiful and laying many eggs.

Missouri L. Haseman (July): This species has been unusually abundant in home gardens and on cabbage in commercial truck gardens throughout the State.

South Dakota A. L. Ford and H. C. Severin (July 16): This pest appeared in damaging numbers all over the State quite suddenly during the second week in July, and is more abundant compared with an average year.

STRAWBERRY

BLACK VINE WEEVIL (Brachyrhinus sulcatus Fab.)

Utah I. M. Hawley (June 15): This species is abundant in beds in Cache, Salt Lake, and Summit Counties, usually just in spots in fields, but in a few cases they have killed out nearly all plants.

MILLIPEDS

Kansas Geo. A. Dean (June 20): These millipedes are reported from Phillips County for the first time attacking strawberries.

STRAWBERRY ROOT-WEEVIL (Brachyrhinus ovatus L.)

Maine E. M. Patch (July 10): Mrs. Lida Walsh reports this species "in every house in town in large numbers." The adults have the "house" habit in Maine. They get in by the thousands sometimes.

FALSE CHINCH-BUG (Nysius ericae Schill.)

Michigan R. H. Pettit (July 12): Recently we have been receiving complaints from the northern part of the Lower Peninsula of Michigan of the destruction of crops by the false chinch-bug. Today it is strawberries, one-half to two-thirds of the plants in an acre having been killed, at Pelleston.



STRAWBERRY LEAF-ROLLER (Ancylis comptana Froehl.)

Nebraska

M. H. Swenk (June 15-July 1): In Hall County a single serious case of infestation with the strawberry leaf-roller was reported in the middle of June.

Utah

I. M. Hawley (June 15): Many complaints of injury from this insect have been received.

BEANS

SEED-CORN MAGGOT (Hylemyia cilicrura Rond.)

Utah

I. M. Hawley (June 15): Beans near McCormick, Millard County, were about 50 per cent infested and replanting was necessary. They were planted right after a rainy period, when the ground was quite moist.

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

Kansas

J. R. Horton (July 6): Adults of the cowpea curculio continue to puncture the stalks, and doubtless are depositing their eggs in large numbers at this time. The greatest number of weevils to a plant was 8, the average about 3. A few were found on cantaloupe.

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

South Carolina

J. A. Berly (July 16): This insect has been forwarded to this office from points in Oconee, Lickens, and Greenville Counties, apparently spreading more than last year.

Alabama

W. E. Hinds (June 30): The Mexican bean beetle taken at Auburn May 8 has died after having deposited about 400 eggs in seven egg groups. These eggs have practically all hatched. No sign of the beetle has been reported in fields in Lee County, but undoubtedly such infestation occurs.

New Mexico

R. L. Middlebrook (July 11): For some unknown reason the bean beetle has not appeared in the southern half of this State in any numbers and the bean growers of the Mesilla Valley and other southern valleys have had no trouble to date. Usually at this time of the year there are many inquiries. Owing to the fact that few inquiries were received an investigation was made and it was found that there are few insects in comparison with last year and former years and practically no damage is resulting so far. (July 16): Only a few larvae have appeared so far. The first brood is behind time. Few eggs mature. Very few batches have been laid in comparison with former years at Dona Ana. The string bean crop will be off before much damage can result, but the Pinto may get caught.

PEAS

PEA APHID (Illinoia pisi Kalt.)

- Michigan R. H. Pettit (June 2): Mr. Harman visited the Paw Paw and Cassopolis region to examine the pea-louse situation and finds that the large number of plant-lice on alfalfa has dwindled very markedly indeed. He brings back specimens of ladybirds, of Lysiphlebus, of another hymenopterous parasite, and a fungus disease, Empusa aphidis. I also received specimens of alfalfa bearing plant-lice killed in large numbers by this latter fungus disease. I also received word that a large number of plant-lice are appearing in the pea canning region north of Grand Rapids.
- Indiana J. J. Davis (July 16): The pea aphid was abundant and destructive to canning peas at Wabash.
- Wisconsin J. E. Dudley, Jr. (June 25): Ladybird beetles are destroying large numbers, syrphid flies are just getting a good start, and fungus disease is of no importance as yet. Aphids are extremely abundant in some fields of late sweet peas. As many as 800 have been collected in five sweeps of a net.
- Iowa Fred D. Butcher (July 14): An aphid, evidently the pea aphid, was found killing sweet peas on this date.
- Nebraska M. H. Swenk (July 1): The last two weeks in June were characterized by an unusual abundance of aphids of several kinds. In the flower gardens the pea aphid was complained of as doing much injury to sweet peas.
- Utah I. M. Hawley (June 23): Although this plant-louse has been abundant on clover and alfalfa this year, it has not been found in serious numbers on peas up to date. There has been some damage to alfalfa.
- New Mexico R. L. Middlebrook: This insect has been reported from Mesilla Park.

CUCUMBERS

STRIPED CUCUMBER-BEETLE (Diabrotica vittata Fab.)

- New York C. R. Crosby (July 10): This insect has been reported from Woodridge attacking cucumbers. Insects have been received.
- G. E. Smith (July 15): This species is reported from Orleans County as abundant in gardens.
- Wisconsin Leslie Herzog (June 30): This species is reported attacking cucumbers from Wisconsin.
- Missouri L. Haseman (June 27): Reports are being received daily concerning the cucumber beetles. Reports thus far have come from central and southern Missouri, mostly, and the beetles seem to be as prevalent as last year.
- Nebraska M. H. Swenk (July 1): The striped cucumber-beetle began serious injuries to cucurbits about the middle of June.

A CUCUMBER BEETLE (Diabrotica tricineta Say)

New Mexico R. Middlebrook (July 13): Reports from the eastern half of the State indicate that these beetles are doing much damage to cucumbers, cantaloupes and watermelons.

MELONS

MELON APHID (Aphis gossypii Glov.)

Indiana J. J. Davis (July 16): The melon aphid has been unusually abundant on cantaloupes in the southern part of Indiana.

Iowa Fred D. Butcher (July 14): Aphids are very generally present on cucumbers, watermelons, and cantaloupes. Ladybugs and syrphids are fairly plentiful.

California Roy E. Campbell (July 12): The melon aphid is appearing in various fields on single plants, but infestation is scattered and damage slight.

ONIONS

ONION MAGGOT (Hylemyia antiqua Meig.)

Michigan W. L. Ward (June 6): The onion maggot is reported present at Falmouth.

Oregon E. A. Hayes (June 1): Large acreages of onions at Salem, are being damaged by this pest.

WIREWORMS (Agriotes mancus Say and Melanotus sp.)

Indiana J. J. Davis (July 16): Wireworms were reported destroying onions near Albion in the northeastern part of the State. Investigation July 2 revealed two species involved. One company reports losses amounting to from \$15,000 to \$20,000. Wireworms of all ages were found. All of the ground, which is muck, is well drained, but much of it is new ground, and the wireworms were on the whole more destructive and numerous on the newer ground, as might be expected. It was interesting to note that where the seed row was rolled when seed was planted, the onions came up better and made a much greater growth than elsewhere and as a result were least injured. The wireworms appeared about the middle of June, at which time the plants in the rows not rolled were much smaller and the small amount of injury to the plants was much more severe than on the larger plants in the rolled rows; in fact the rolled rows were comparatively little damaged. From all data that could be gathered, comparatively little injury would have resulted, except possibly in the newest ground, had the seed rows all been rolled after planting.

ONION THRIPS (Thrips tabaci Lind.)

Indiana C. R. Cleveland (June 21): The onion thrips are beginning to appear on young onions at Munster, Lake County, on this date.

BEETS

SUGAR-BEET WEBWORM (Loxostege sticticalis L.)

South Dakota A. L. Ford and H. C. Severin (July 5): A serious outbreak occurred on the Cheyenne River in Fall River County, where the worms took practically everything in their path. These were successfully controlled by poisoned bran mash.

Idaho I. M. Hawley (June 23): A few fields are infested and growers are starting to spray.

SUGAR-BEET ROOT-MAGGOT (Tetanops aldrichi Hendel)

Idaho I. M. Hawley (June 23): Flies are out and depositing eggs now. They are not very abundant, and not much damage is expected.

PALE-STRIPED FLEA-BEETLE (Systema taeniata v. blanda Mels.)

Michigan R. H. Pettit (June 25): Systema blanda is making trouble again on beets, both on sugar beets and on mangels. They also attack beans.

SPINACH LEAF-MINER (Pegomya hyoscyami Panz.)

New York G. E. Smith (July 15): This species is reported attacking beets and Swiss chard in Orleans County, with the statement that it is bad in gardens.

Delaware C. O. Houghton (June): Beets are badly infested by this leaf-miner at Newark this year.

MEALY PLUM APHID (Hyalopterus arundinis Fab.)

Delaware C. O. Houghton (June): This species is appearing in large numbers this year at Newark. There were very few last year.

DISONYCHA N. SP.

Porto Rico George N. Wolcott (June 25): This common pest of beets and Amaranthus spp. had bitten holes in the leaves and killed a large patch of weed, Philoxerus vermiculatus L., growing around a water-hole. Blackbirds, Holoquiscalus brachypterus Cassin, were feeding on the beetles.

ASH-GRAY BLISTER-BEETLE (Macrobasis unicolor Kby.)

Maine E. M. Patch (July 20): This insect is reported from Dodge Pond, Camp Rangeley, as ruining Swiss chard, by Frank L. Badger.

THE HISTORY OF THE

REIGN OF KING CHARLES THE FIRST

1625

BY JOHN BURNET

OF THE HISTORY OF THE REIGN OF KING CHARLES THE FIRST, FROM THE BEGINNING OF HIS REIGN, TO THE END OF HIS REIGN, IN THE YEAR 1649.

IN TWO VOLUMES.

THE FIRST VOLUME. FROM THE BEGINNING OF HIS REIGN, TO THE END OF HIS REIGN, IN THE YEAR 1649.

THE SECOND VOLUME.

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MISCELLANEOUS FEEDERS

WIREWORMS (Elateridae)

ne E. M. Patch (July 13): This species has been reported from Monmouth attacking sweet corn; I didn't see specimens, but the common species in that locality is Agriotes mancus Say.

souri L. Haseman (June 27): Complaints are still being received regarding wireworms, more or less in scattered vicinities over the State.

h I. M. Hawley (June 12): Wireworms are doing lots of damage to tomatoes in a few fields in Davis County.

ZEBRA CATERPILLAR (Parastrepha picta Harris)

iana H. F. Dietz (June 22): The zebra caterpillars are very abundant in and around Indianapolis. This is the first time since 1916 that this insect has been abundant.

NUTTALL'S BLISTER BEETLE (Lytta nuttalli Say)

North Dakota R. L. Webster (July 13): This species is more than usually common on potatoes and beans.

A SYMPHYLID

ah I. M. Hawley (June 15): This species is very destructive in Davis, Salt Lake, and Juab Counties. This small milliped feeds on everything and is spreading farther each year. It even kills out the weeds where it is abundant.

BANDED FLEA-BEETLE (Systena taeniata Say)

iana J. J. Davis (July 16): The pale-striped flea-beetle which was reported damaging corn at West Point and Goodland was later reported from other localities. Within the past week this species has been destructive to late canteloupes and cucumbers just coming through the ground at LaFayette.

SOUTHERN FIELD - CROP INSECTS

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

General Distribution B. R. Coad and assistants: The boll weevil survey up to July 20 indicates that the weevil has appeared in the cotton fields over practically the entire Cotton Belt. The present limits are within a line extending from Hidalgo County, in southeastern Texas, in a northwesterly direction through Bexar County to Cole County and Mitchell County, thence eastward to Montague County, in the northeastern part of the State, thence across the State line in a northwesterly direction to Tillman County, Okla., thence northeastward to the east-central part of the State in Okfuskee County, thence eastward into north-central Arkansas through the southern part of Polk County, to the northeastern part of the State in Sharp County, thence across the Mississippi River to the northwestern corner of Tennessee in Obion County, thence in a southeasterly direction through Decatur and Hardin Counties and along the northern border of Mississippi and Alabama, across the northern part of Georgia, including the entire State of South Carolina and northeasterly through Cleveland County, N. Car., and eastward across this State through Iredell, Stanly, Moore, Cumberland, and Wayne Counties, covering the southern third of the State. The region south of this line is generally infested.

Alabama W. E. Hinds (June 30): There is a very heavy survival of boll weevils throughout the southern half of two-thirds of the State, and it may be also through the northern part of the State. In some counties weevils are reported as being more numerous in the cotton fields at the time the squares begin to form than ever before. At Auburn in some experimental plat work we are finding from 50 to 100 weevils per acre at the time squaring begins on land that has not been in cotton during the past six years, which indicates an unusually abundant movement from cotton field areas to newly planted cotton fields, I think the heaviest I have ever known.

COTTON APHID (Aphis gossypii Glov.)

Georgia O. I. Snapp (July 15): Cotton aphids have been observed in numbers on cotton at Fort Valley.

COTTON CUTWORM (Prodenia ornithogalli Guen.)

Louisiana T. H. Jones (July): Larvae were sent in from Pleasant Hill on July 3 and from Long Bridge on July 6.

BOLLWORM (Heliothis obsoleta Fab.)

Louisiana T. H. Jones (July): Larvae were received from Dubberly (Webster Parish) on July 10 and from Grant Parish on July 14.

THE HISTORY OF THE UNITED STATES

The history of the United States is a story of growth and change. It begins with the first settlers, who came to the Americas in search of a new life. They found a land of opportunity, but also a land of challenge. The early years were marked by conflict and struggle, as the settlers fought to establish their communities and defend their rights. Over time, the United States grew from a small colony into a powerful nation. It was a process of constant evolution, shaped by the dreams and aspirations of its people. The story of the United States is a testament to the power of the human spirit and the ability of a nation to overcome adversity and build a better future.

The early years of the United States were marked by a series of challenges and struggles. The settlers faced a harsh and unfamiliar environment, with limited resources and a constant threat of conflict with the native population. Despite these difficulties, they persevered and established a series of colonies along the eastern coast. These colonies were the birthplace of a new nation, one that was based on the principles of liberty and democracy. The struggle for independence was a long and arduous one, but it was ultimately successful. The United States emerged as a sovereign nation, free to determine its own destiny.

The growth of the United States was a process of constant evolution. As the colonies grew, they began to assert their independence from Britain. The American Revolution was a turning point in the nation's history, as it marked the birth of a new government. The Constitution was drafted, and the United States became a federal republic. This new form of government was designed to protect the rights of the people and ensure the stability of the nation. Over time, the United States expanded its territory, acquiring new lands and territories. This expansion was a source of both pride and controversy, as it raised questions about the rights of the native population and the future of the new territories.

The United States has a rich and diverse history, one that is shaped by the experiences and aspirations of its people. It is a story of growth and change, of struggle and triumph. The history of the United States is a testament to the power of the human spirit and the ability of a nation to overcome adversity and build a better future. It is a story that continues to inspire and inform us today.

COTTON SQUARE-BORER (Uranotes melinus Huebn.)

Louisiana T. H. Jones (July): Larvae were sent in from Pleasant Hill on July 3 and from Long Bridge on July 6.

METACHROMA ANTENNALIS WEISE

Porto Rico Geo. N. Wolcott (June 25): For the past two years these beetles have been reported as injuring cotton at Quebradillas. This year large numbers were found in spider nests and curled-up leaves of a number of bushes on the beach at Arecibo. An extended examination of many cotton fields, both near by and throughout the cotton district, near the beach and back in the hills, failed to discover any of them on cotton.

PYRALID (undetermined)

Louisiana T. H. Jones (July): We received letters on July 2, 4, and 6 from Gloster complaining of injury by a caterpillar that "seems to stay on the under-side of the leaf of cotton, and there is always present a kind of web." The correspondents reported considerable damage being done in the section and it was reported that one farmer was applying calcium arsenate for control of the worms. Two larvae were sent in.

GARDEN WEBWORM (Loxostege similalis Guen.)

Arkansas T. E. Holloway and B. R. Coad (July 12): Dwight Italy, Associate Entomologist, Arkansas, reports in the press of July 8 the presence of the garden webworm. Reports reaching him indicate that the insect is doing considerable damage to cotton in the vicinity of Roland.

COTTONWORM (Alabama argillacea Huebn.)

Louisiana T. H. Jones (July 6): Two larvae, practically full-grown, were noted in cotton field at Baton Rouge.

Texas T. C. Barber (July 14): In regard to the appearance of the cottonworm in the Brownsville section, I would state that it has been in this section for more than the past month. The first occurrence of which I heard was on last June 8, when it was reported to be present in the vicinity of Rio Grande. On June 10 it was reported from several localities in Hidalgo County. The first specimens which I saw personally in Brownsville were on the Piper Plantation, 6 miles east, on June 14, but the plantation men told me that they had been there for about three days then, and poisoning operations were just being commenced on a large scale. Towards the end of June cooler weather with cloudiness and frequent rains, which washed off the greater portion of the poison almost

THE HISTORY OF THE UNITED STATES

OF THE UNITED STATES OF AMERICA

The history of the United States is a story of growth and change. It begins with the first settlers who came to the Americas, and continues through the years of exploration, settlement, and the struggle for independence. The story is one of a people who have built a great nation from a small group of pioneers.

THE FOUNDING OF THE NATION

The first settlers came to the Americas in search of a new home. They were driven by the desire for land and freedom. They found a land of opportunity, and they built a new society. The story of the founding of the nation is a story of courage and sacrifice.

THE STRUGGLE FOR INDEPENDENCE

The struggle for independence was a long and difficult one. It was a struggle for the right to self-government. It was a struggle for the right to be free from the control of a foreign power. The story of the struggle for independence is a story of heroism and bravery.

THE BUILDING OF THE NATION

The building of the nation was a process of growth and change. It was a process of creating a new society from the ruins of the old. The story of the building of the nation is a story of progress and achievement.

The story of the United States is a story of a people who have built a great nation. It is a story of a people who have fought for freedom and justice. It is a story of a people who have built a nation that is the envy of the world.

as soon as applied, resulted in an outbreak of the worms which has absolutely got beyond control. During the few days I was away on my trip nearly all of the cotton in the Valley was defoliated. It is rather difficult to estimate what the actual loss from the attack will be, since a large portion of the cotton crop is already opening, several hundred bales a day being ginned in the Valley. While the late cotton will be severely injured, the loss will be partially offset by the boll weevil loss which would have been experienced in the absence of the worms. At the present time the outbreak of the cotton caterpillar extends from Brownsville along the coast as far as Liberty County. Inland the northern limit of severe injury coincides just now with the main line of the Southern Pacific Railway.

T. E. Holloway and B. R. Coad (July 12): The cotton leafworm is reported as present in cotton fields in the vicinity of Nacogdoches, the demand for arsenicals being stimulated there.

Geo. A. Maloney: Farmers of Carthage, Panola County, report the presence of the cotton leafworm on July 5. Also the State Entomologist reports through the press of July 15 an unusually heavy infestation of leafworm throughout southern Texas as far north as Travis County.

Arkansas

Dwight Isely (July 20): The cotton leafworm was collected at Forrest City, St. Francis County, on July 18.

Porto
Rico

Geo. N. Wolcott (June 25): One live pupa was found at Hatillo, one empty pupal skin at Garrochales. These are the first records this year of Alabama in Porto Rico, not a trace of it having been found at Boqueron two and four months ago after the outbreak of last fall and winter had been eliminated by Chalcis incerta Cresson.

TOBACCO

CUTWORMS (Noctuidae)

Connecticut

John Fay (June 22): Cutworms are attacking tobacco at Portland. They are much more destructive than in an average year with 15 per cent damage. Poisoned bait, hunting for worms by hand, and poisoned plants are the remedies used.

TRUE WIREWORMS (Elateridae)

Kentucky

A. C. Morgan (June 21): At Lexington some fields with 50 to 60 per cent infestation have sufficient injury to require 10 to 15 per cent resetting. Practically every field has some infestation.

TOBACCO BUDWORM (Heliothis virescens Fab.)

Georgia A. C. Morgan through T. E. Holloway (July 10): This pest is very general around Tifton.

Louisiana T. H. Jones (June 21): During a visit to the Perique tobacco section, St. James Parish, larvae were noted to be common, especially on shoots that had come up from plants in fields already harvested. The county agent believes this to be the most important insect pest of tobacco in this section.

TOBACCO SUCKFLY (Dicyphus minimus Uhler)

Florida F. S. Chamberlin (July 14): This insect is very abundant at present. The tobacco crops were harvested in time to prevent damage.

A WEBWORM (Acrolophus popeanellus Clem.)

Tennessee A. C. Morgan (June 21): Damage occurred in only a few fields. The infestation in the worst fields ran as high as 80 per cent.

HORNWORMS (Protoparce spp.)

Louisiana T. H. Jones (June 21): During a visit to the Perique tobacco section, St. James Parish, hornworms of various sizes were noted to be fairly common. P. sexta was more numerous than P. quinquemaculata. The county agent reports that hand-picking is the only remedy used, though the larvae cause severe injury in some fields during some years.

RICE

RICE STALK-BORER (Chilo pleiadellus Zinck.)

Louisiana J. W. Ingram (June 26): Both the larvae and pupae of the rice stalk-borer have been found in the tall grass, commonly called bull grass, growing near the rice fields at Crowley. No stage of the borer has been found in the rice fields up to this time.

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana J. W. Ingram (July 20): I visited a field of headed rice 2 miles west of Rayne. The field was about 1 per cent infested with moth borers. The borers were more numerous in the rice on the higher land and on the levees. No rice stalk-borer were found in this field.

RICE WATER-WEEVIL (Lissorhoptrus simplex Say)

Louisiana J. W. Ingram (July 21): The rice water-weevil has been doing its usual amount of damage this year. The damage is most noticeable along water furrows and deeply flooded portions of fields.

SUGAR-CANE

FALL WEBWORM (Laphygma frugiperda S. & A.)

Louisiana T. E. Holloway and W. E. Haley (July 5): Large larvae of this pest are on nearly every plant in some parts of a plantation near New Orleans. The cane will recover, however, from the damage so far inflicted. There is some evidence of a braconid parasite which may hold the species in check. The season has been wet and cool.

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana E. E. Holloway and W. E. Haley (June 25-26): Considerable numbers of young plants killed by this pest were found in some fields. The damage is not so great at present, but it indicates serious damage later in the season. Many egg clusters of the sugar-cane borer were found, most of which were parasitized by Trichogramma minutum Riley.

ROUGH-HEADED CORN STALK-BEETLE (Ligyris (Euetheola) rugiceps Lec.)

Mississippi R. W. Harned: We are still receiving many complaints in regard to L. rugiceps. This insect has apparently done a large amount of damage this year to corn and sugar cane. The complaints are still coming in almost every day, but are not as numerous as they were a month ago.

Louisiana T. H. Jones (June 25): A beetle and stalk of sugar cane showing injury by this beetle were sent in by the county agent from Farmerville.

FOREST AND SHADE-TREE INSECTS

MISCELLANEOUS FEEDERS

PERIODICAL CICADA (Tibicen septendecim L.)

BROOD XIV (SEVENTEEN-YEAR RACE)

- New York J. J. Levison (July 17): The 17-year locust was exceedingly abundant on an estate at Cold Spring Harbor and elsewhere in the vicinity of Sea Cliff, L. I. They were so thick that we shoveled them up in pailfuls.
- Pennsylvania P. R. Myers: A few adults, numerous pupal skins, and chimneys of this insect were observed along the mountains near Duncannon, Perry County, on May 27.
- S. W. Frost (July): The 17-year locust was found at many places in Adams County. Only in a few places has the injury been found serious to orchards and in these places the injury was principally along woods. Both peach and apple were attacked in such cases. The locusts are quite numerous in the woods and the dead leaves from broken twigs are very conspicuous.
- Parker T. Barnes (July 10): Reports indicate that this brood appeared over central and southeastern Pennsylvania, west to Franklin, Huntingdon and Clearfield Counties, and north to Clinton, Lycoming, and Luzerne Counties.
- Ohio T. H. Parks (July 19): Brood XIV adults have seriously injured some young orchards in Lawrence and Scioto Counties. These orchards were usually closely associated with native timber. Forest trees now testify to the visit of the cicadas.
- Kentucky A. C. Morgan (June 21): A belt of a mile or more at Bloomfield and Hodgenville was noticed June 14, numerous enough to drown the sound of a passing auto.

A NEW PEST (Phyllobius oblongus L.)

- New York R. E. Horsey through M. D. Leonard (July 17): A European beetle on elm was common June 2 to 9, the last two being found July 6. It did little damage and we did not spray for it. I only saw it on three American elms 50 feet or more tall, about 40 years old, which were here before this became park property. Across the road is a large collection of crab apples from northeastern Asia and North America where no trace of this insect has been found.

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M. D. Leonard: On June 2 Mr. Horsey sent specimens to this office with a statement that the beetles were very abundant and doing some damage to the leaves of elm trees in Highland Park by eating holes in them. The insect was determined by Dr. Schwarz, who states that this snout-beetle had not been found before in this country. It is recorded from England as feeding upon apple buds, and it is thought that there is some likelihood of its developing into a pest should it become established in this country.

FALL WEBWORM (Hyphantria cunea Drury)

- Indiana B. A. Porter (June 21): An outbreak of this species seems about to occur in the region about Vincennes. Many nests are already in evidence.
- Kansas Geo. A. Dean (June 22 and 25): Infestation occurs at Edwardsville and Manhattan on elm and box elder. The webworms are more abundant than in an average year. From May 1 to 16 it was rainy and cool and from May 16 to 25 hot and getting dry.

FOREST TENT-CATERPILLAR (Malacosoma disstria Huebn.)

- Massachusetts A. F. Burgess (June 30): Several reports indicate that this insect is common over most of New England. No serious defoliation is reported, however.
- Idaho J. C. Evenden (June 26): Throughout the northern part of the State the wild cherry is being defoliated by this insect. The attack in many places spreads to other native shrubs, but the favored host plant is apparently the wild cherry.
- Oregon A. L. Lovett (June 22): This has been the season for an unusual outbreak of tent-caterpillars. Here in Oregon they seem to come in rather definite seven-year cycles. In 1915 they were very bad, but were practically cleaned out entirely by a Tachinid parasite in 1916. Last year they were serious and this year the climax of the infestation is here, and again we find somewhere in the neighborhood of 90 to 95 per cent parasitism by this Tachinid fly. I note that the eastern tent-caterpillar likewise is unusually prevalent this year. Another interesting thing to me in connection with these caterpillar outbreaks is the practically absolute absence of hymenopterous parasites.

BAGWORM (Thyridopteryx ephemeriformis Haw.)

- Georgia O. I. Snapp (July 20): Bagworms are unusually abundant in this section this year, attacking principally arborvitae and other evergreens. Some arborvitae have been completely defoliated. Arsenical spraying had to be resorted to.

The first part of the paper is devoted to a general discussion of the problem of the origin of life. It is shown that the problem is one of the most important and most difficult in the history of science. The author discusses the various theories of the origin of life, and shows that the most plausible is the theory of spontaneous generation. This theory is based on the fact that life is a complex of many different parts, and that these parts are all derived from a common ancestor. The author also discusses the possibility of life being created by a divine power, and shows that this is a very unlikely possibility.

THE ORIGIN OF LIFE

The second part of the paper is devoted to a detailed discussion of the theory of spontaneous generation. The author shows that this theory is based on the fact that life is a complex of many different parts, and that these parts are all derived from a common ancestor. The author also discusses the possibility of life being created by a divine power, and shows that this is a very unlikely possibility. The author then discusses the various theories of the origin of life, and shows that the most plausible is the theory of spontaneous generation.

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Indiana H. J. Davis (July 16): Bagworms have been destructive to arborvitae, cedar, and other trees in the southern fourth of the State, reports coming in the last of June and early in July.

Kansas J. W. McColloch (July 20): This species is attacking cedars in Wabaunsee, Shawnee, and Osage Counties in the northeastern part of the State, and in Greenwood, Wilson, and Sumner Counties in the southeastern part. This insect is somewhat more abundant than in an average year, badly defoliating trees in some places. The weather has been warm with high rainfall.

ELM SPANWORM (Ennomos subsignarius Huebn.)

New York C. R. Crosby (July 9-10): A great flight of moths was observed from Newark to Niagara Falls on the 12th. A few came to lights at Lilly Dale.

Ohio T. H. Parks (July 19): These larvae were numerous on shade trees in East Liberty, Logan County, during June and caused defoliation. Adults were appearing during early July.

Indiana J. J. Davis (July 16): Additional records have been received of the snow-white linden moth. Infestation occurred in a strip several counties wide through the central part of the State, east and west from near the Illinois line to the Ohio State line. The white moths were reported as being abundant in several sections July 1.

H. F. Dietz (June 22): The snow-white linden moth is very abundant this year in the northern two-thirds of the State. Ash, basswood, hard maple, beech, elm, hackberry, water beech, and ironwood are being seriously defoliated. The caterpillars at this time are almost full-grown. Although last year between 50 and 75 per cent of the larvae collected around Indianapolis were parasitized by Pimpla inquisitor (?) and an undetermined tachinid, this has not reduced the numbers of the pests this year.

ORIENTAL MOTH (Cnidocampa flavescens Walk.)

Massachusetts A. F. Burgess (June 30): This insect is abundant in the vicinity of the Dorchester and Roxbury districts of Boston and quite abundant in the Norfolk Downs district of Quincy, also common in Winthrop. It is found on various shade and fruit trees, though it seems to be most common on Norway maple.

ARBORVITAE

ARBORVITAE LEAF-MINER (Argyresthia thuiella Pack.)

Maine E. M. Patch (July 20): This pest is causing consternation in nurseries and to landscape gardeners. I judge the work is done for this season.

- Vermont Geo. M. Coddington (May 29): On a trip through Vermont last week I noticed that a leaf-miner was rather common on the hemlock and have also found it around New York.
- Connecticut Geo. M. Coddington (May 29): We found a leaf-miner in Stamford doing considerable damage to an arborvitae hedge.
- New York M. D. Leonard (July 7): This insect has been common in Rochester parks for years but is not injurious. R. E. Horsey reports the finding on July 2 of one chrysalis and two larvae.

ASH

ASH BORER (Podocesia fraxini Lugges)

- North Dakota C. N. Ainslie (June 30): Ash trees 15 to 20 feet high are riddled with larval mines and are being killed. It also attacks lilacs. Twenty and more empty pupae were observed extending from a single small ash tree. The trouble seems local, neighboring towns free.

ASH EPHID (Pemphigus fraxinifolii Thom.)

- Nebraska M. H. Swenk (June 15-July 1): The last two weeks in June were characterized by an unusual abundance of aphids of several kinds. Reports of the curling of the ash leaves by the ash aphid were received.

BEECH

WOOLLY BEECH EPHID (Phyllaphis fagi L.)

- New York M. D. Leonard (June 20): The walks in the town of Cannister were reported spattered with honeydew. Beech trees are looking bad.
- R. E. Horsey (June 27): On purple and other small European beech trees at Rochester this insect is very numerous on the underside of the leaves. It is sprayed and controlled with soap and Blackleaf 40. It was noted about June 12 and sprayed about a week later.
- Indiana H. F. Dietz (June 22): This is a bad plant-louse year, this species being very abundant on the leaves of the native beech (Fagus grandifolia Ehrhart). Leaves of large trees are badly curled by this pest around Indianapolis.

BIRCH

SPEAR MARK (Eulypa hastata L.)

Maine E. M. Patch (July 20): Rheumaptera hastata is swarming all over the State. I am besieged with alarmed questions.

Carl Heinrich: Referring to E. hastata Linn, all the data we have on this insect are to be found in Packard's Fifty Report, page 503, under the heading Rheumaptera hastata. The caterpillar has several food plants—Betula, Myrica, sweet gale, wax myrtle, huckleberry, and Rhododendron are recorded. The species overwinters as pupa, the moths issuing in spring. There are probably two generations a year.

New Hampshire T. E. Snyder (July 26): The only record in this office of this insect reads, "moths which have been found in great numbers this summer in our timber holdings in northern N.H."

BRONZE BIRCH BORER (Agrilus anxius Gory)

New York M. D. Leonard (July 17): All birches of the cut-leaved variety observed in the city parks and streets of Albany are dying or have died. The City Forester reports that this city has lost most of its finest cut-leaved birches from this insect.

BOXELDER

BOXELDER APHID (Periphyllus negundinis Thos.)

Utah I. M. Hawley (June 13): The boxelder aphid is abundant in Davis, Salt Lake, and Utah Counties.

A LEAF-ROLLER

Utah I. M. Hawley (June 13): The caterpillars of a leaf-roller are stripping the trees in Davis and Salt Lake Counties. They spin down on threads and cover weeds and trunks of trees with silk.

ELM

EUROPEAN ELM SCALE (Gossyparia spuria Modeer)

New York M. D. Leonard (July 7): R. E. Horsey reports that the young are now active at Rochester.

Indiana H. F. Dietz (June 22): The European elm scale is a very serious American elm pest in the northern part of Indianapolis, where the infestation is slowly spreading.

- Wisconsin Mike Quann (July 12): Several elms in Madison, Dane County, are severely infested.
- Nebraska M. H. Swenk (June 15-July 1): During the last week in June a case of infestation of elms in the city of North Platte, Lincoln County, with the European elm scale came to notice, the first finding of that pest in the State.
- New Mexico R. Middlebrook (July 7): This is a new insect in this State. The northern half of the State is badly infested this year with this pest.
- Idaho J. C. Evenden (June 26): Nearly every shade tree in the city of Coeur d'Alene is heavily infested with this insect. Many property owners have secured relief by washing the trees with a strong stream of water.

WOOLLY ELM APHID (Eriosoma americanum Riley)

- Maine E. M. Patch (July 2): The county agent from Belfast reports this insect as attacking trees.
- New York C. R. Crosby (July 3): Infested twigs have been received from Hornell.
- Delaware C. O. Houghton (June): Elm trees on the University grounds at Newark are badly infested this year.
- Nebraska M. H. Swenk (June 15-July 1): The last two weeks in June were characterized by an unusual abundance of aphids of several kinds. The leaves of the elm were on many trees being curled by the woolly aphid, which was also plentiful.

ELM COCKSCOMB GALL (Colopha ulmicola Fitch)

- New Jersey H. B. Weiss: The cockscomb gall of elm is more plentiful than usual in the northern half of the State.

ELM LEAF-MINER (Kaliophrissa ulmi Sund.)

- New York M. D. Leonard (July 17): This insect has caused slight injury to Camperdown elms in this city of Albany. Nicotine sulphate was used about two weeks ago by the City Forester with good success.

HICKORY

SPRING CANKERWORM (Paleacrita vernata Peck.)

- New York R. E. Horsey (June 11): This species is attacking hickory at Seneca Park, Rochester. They are considerably less than last year but quite numerous. They prefer the hickories, mostly pignuts, but were found on the white and red oaks,

witch hazel, red maple, native hawthorns, domestic and wild cherry, basswood, shingle oak, white ash, and American elm. Flowering dogwood, spicebush, sassafras, and tupelo had very few on them even when next to badly infested hickories.

LARCH CASE-BEARER (Coleophora laricella Huebn.)

Maine

E. M. Patch (June 26): John Kellenberger reports a good many trees being affected at Rockland. This insect is also abundant near Bangor this year.

A. F. Burgess (June 30): This species is reported as common on larch in Penobscot, Oxford, and Hancock Counties.

LOCUST

LOCUST BORER (Cyllene robiniae Forst.)

New York

M. D. Leonard (July 17): Most of the black locusts in the City parks at Albany are very generally infested. Considerable good was done two years ago by the application of a tree wash, as reported by the City Forester.

J. J. Levison through M. D. Leonard (July 17): The locust borer is doing considerable damage to locusts in various parts of Long Island.

MAPLE

GREEN-STRIPED MAPLE WORM (Anisota rubicunda Fab.)

Kansas

Geo. A. Dean (June 25): This species is reported from Delia, Jackson County. Trees are defoliated. It was rainy and cool from May 1 to 16 and hot and dry from May 16 to 25.

Iowa

F. D. Butcher (July 24): In a maple grove on a farmstead in Page County the caterpillars stripped about one-third of the trees. Most of them have pupated. This is the only report this year.

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

New York

C. R. Crosby (July 16): Infested silver maple twigs were received from Elmira.

Indiana

J. J. Davis (July 16): The cottony maple scale continues as a serious shade-tree pest in the northern half of the State but possibly not quite as generally severe as last year. The first young were observed at Portland July 3. They may have begun to hatch a day or two before.

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OAK

OAK LEAF-ROLLER (Tortrix quercifoliana Fitch)

Connecticut Geo. H. Hollister (June 23): This species has been reported on pin: oak from Hartford.

PINE

PINE-LEAF SCALE (Chionaspis pinifoliae Fitch)

New York R. E. Horsey (June 27): On pines in Highland Park, Rochester, just beginning to hatch. This pest has been about eliminated from Highland Park by the soap and Blackleaf 40 spraying. Before we found this remedy, some pines were so infested we talked of destroying them, but now they are in fine condition.

PINE BUTTERFLY (Necphasia menapia Feld.)

Idaho J. C. Evenden (June 15): Countless numbers of the little caterpillars are to be found on the foliage of the pine trees at this time at Payette Lakes, and unless the natural enemies of this pest are able to reduce their numbers there will be a recurrence of the 1922 epidemic of this insect. Thousands of acres of yellow pine were defoliated last season.

A PINE LEAF-MINER (Epinotia meritana Heinrich)

Utah I. M. Hawley (June 23): This insect, which has been known for several years in Hiawatha Canyon near Price, has killed many trees of balsam pine. The needles are mined, drop off, and the trees do not live more than two years after the infestation begins. The outbreak is spreading each year.

PINE BARK-LOUSE (Chermes pinicorticis Fitch)

Wisconsin S. B. Fracker (July 1): This species is reported as abundant in several nurseries in the southeastern part of the State.

MOUNTAIN-PINE BEETLE (Dendroctonus monticolae Hopk.)

Montana J. C. Evenden (June 1): The infestation which began in the Missoula National Forest in 1913 and which has spread both north and south is still in existence, and a tremendous volume of timber is destroyed annually in the Helena National Forest.



AN APHID (Dilachnus strobi Fitch)

Wisconsin S. B. Fracker (June 22): This insect is destructive at St. Croix Falls, Polk County.

NANTUCKET PINE MOTH (Rhyacionia frustrana Comst.)

Louisiana T. H. Jones (June 25): Infested twigs were sent in from Bogalusa with a letter complaining of injury to young loblolly pines.

ABBOT'S WHITE PINE SAWFLY (Lophyrus abbotii Leach)

Wisconsin Simon Maloney (June 20): This insect is attacking jack pine in Marinette and Dane Counties.

POPLAR

POPLAR BORER (Saperda calcarata Say)

Nebraska M. H. Swenk (June 15-July 1): Continued reports are received of injury by borers of various kinds, principally the poplar borer.

SATIN MOTH (Stilpnotia salicis L.)

New Hampshire P. R. Lowry: Inspection has shown this species to be present as far north as Concord and Dover. The first adults were observed July 5.

SPRUCE

SPRUCE BUDWORM (Tortrix fumiferana Clem.)

Wisconsin A. J. Riker (July 1): This species is reported on balsam in Waukesha County. It is worse than usual in nurseries.

COTTON RED SPIDER (Tetranychus telarius L.)

New York J. J. Levison through M. D. Leonard (July 17): The red spider was abundant on red cedars and spruce in the vicinity of Sea Cliff.

Nebraska M. H. Swenk (June 15-July 1): Evergreen trees, and in one case apple trees, were reported as being injured by the red spider.

CEDAR

RED CEDAR BARK-BEETLE (Phloeosinus dentatus Say)

Nebraska

M. H. Swenk (June 15-July 1): In Merrick County a grove of red cedars in a public park was found being badly injured by a species of bark-beetle believed to be P. dentatus.

TULIP

TULIP SPOT GALL (Thecodiplosis liriodendri O. S.)

New York

M. D. Leonard (July 17): A large tree in Washington Park, Albany, has the foliage badly disfigured by numerous galls.

INSECTS ATTACKING GREENHOUSE

AND ORNAMENTAL PLANTS

ASTERS

ROOT APHID (not determined)

Maryland C. A. Weigel (June 13): Root aphids are reported from northeastern Maryland.

Ohio C. A. Weigel (July 9): Root aphids are reported from Chillicothe.

DANDELION ROOT APHID (Trama erigeronensis Thos.)

Indiana H. F. Dietz (June 22): This species is very abundant on the roots of aster.

CHRYSANTHEMUM

CHRYSANTHEMUM GALL-MIDGE (Diarthronomyia hypogaea F. Loew)

Indiana H. F. Dietz (June 22): Among the greenhouse insects this midge is perhaps the most important. The cool weather in May was very favorable to the development of this insect, and where florists were not on their guard during this month heavy infestations took place where the insect had previously been under control but not entirely eradicated.

BLACK CHRYSANTHEMUM APHID (Macrosiphoniella sanborni Gill.)

Nebraska M. H. Swenk (June 15-July 1): The last two weeks in June were characterized by an unusual abundance of aphids of several kinds. The black chrysanthemum aphid was frequently found doing much injury to chrysanthemums.

GREEN CHRYSANTHEMUM APHID (Aphis rufomaculata Wilson)

Indiana H. F. Dietz (June 22): This insect has been very abundant on chrysanthemums this year, a condition that is unusual in Indiana greenhouses.

ROSE

ROSE APHID (Macrosiphum rosae L.)

Indiana H. F. Dietz (June 22): This species is very abundant on roses.

ROSE LEAF-ROLLER (Archips rosaceana Harr.)

New York R. E. Horsey (June 27): This species was first noted May 29. It is rather common on hybrid perpetual as well as our rose species—about the same as during the last two years but perhaps more scattered in all our plantings of roses, both hybrids and species. It is kept under control by dusting with powdered hellebore, at Highland Park, Rochester.

SPINY ROSE GALL (Rhodites bicolor Harr.)

New Hampshire P. R. Lowry (June 29): This insect seriously deformed a number of rose bushes at North Hampton.

IRIS

IRIS BORER (Macronoctua onusta Grote)

Maine C. A. Weigel (June 29): This species is attacking iris at Ocean Park.

New York C. A. Weigel (July): This species was attacking iris at Brooklyn on July 8 and at Mt. Vernon on July 11.

New Jersey C. A. Weigel (July 10): This species is attacking iris at Nutley.

Pennsylvania C. A. Weigel (May 20): This species is attacking iris at Chestnut Hill.

MISCELLANEOUS

SUMAC PSYLLID (Calophya nigribennis Riley)

New Jersey H. B. Weiss (June 22): This psyllid is very abundant in nurseries and elsewhere on black sumac.

DANDELION ROOT APHID (Trama erigeronensis Thos.)

Indiana H. F. Dietz (June 22): This is a bad plant-louse year, this species being very abundant on the roots of dahlia.

ROOT APHIDS (not determined)

Tennessee C. A. Weigel (May 5): Undetermined species of root aphids were found attacking dahlia and larkspur at Monteagle.

GOLDEN GLOW APHID (Macrosiphum rudbeckiae Fitch)

Indiana H. F. Dietz (June 22): This species is very abundant on golden glow.

A NEMATODE (Tylenchus dipsasi Kuhn)

New Jersey H. B. Weiss (June 18): This nematode was found attacking stems and leaves of phlox, finally causing the death of the plants. Stems are enlarged; leaves are rolled in tightly toward the midrib.

SPIREA APHID (Aphis spireaella Schout.)

Indiana H. F. Dietz (June 22): This species is very abundant on Spirea vanhouttei.



Nasturtium Aphid (Aphis rumicis L.)

- New Jersey C. A. Weigel (June 29): This aphid is attacking nasturtiums at Allendale.
- Indiana H. F. Dietz (June 22): This species is very serious on nasturtium.

Leaf-roller (Archips parallela Rob.)

- New York R. E. Horsey (June 27): I am informed that this was noticed in Rochester about seven years ago but has not been noticeable since until this year.

Boxwood Leaf-miner (Monarthropalpus buxi Labou.)

- New Jersey Orville W. Spicer (June): This insect seems to be totally destroying many box hedges and specimen shrubs in the vicinity of Morristown.

Variegated Cutworm (Lycophotia margaritosa Haw.)

- Indiana H. F. Dietz (June 22): The variegated cutworm is unusually abundant both out-of-doors and under glass. One florist reports finding 50 half-grown caterpillars in 10 square feet of bench space.

Greenhouse Leaf-tyer (Phytomyia ferrugalis Huebn.)

- Indiana H. F. Dietz (June 22): The greenhouse leaf-tyer has been found in several greenhouses in widely separated parts of the State doing serious damage to chrysanthemum, snapdragon, and forget-me-not.

Stalk Borer (Papaipema sp.)

- Connecticut C. A. Weigel (July 12): The stalk borers are attacking pussywillow and aster at Bridgeport.
- New York C. A. Weigel (July): Stalk borers were reported as attacking pussywillow and aster at Buffalo on July 10 and at Jamaica as attacking dahlias on July 4. They were also reported from Richmond Hill, Flushing, L. I., on July 9 as attacking dahlia and foliage plants.
- Massachusetts C. A. Weigel (June 30): Stalk borers are reported as attacking dahlias at Lynn.
- Missouri C. A. Weigel (July 4): Stalk borers are reported as attacking aster at O'Fallon.

INSECTS AFFECTING MAN AND DOMESTIC ANIMALS

MAN

FLEAS (Siphonaptera)

Missouri

L. Haseman: Reports from all over the State are being received concerning the abundance of fleas. They seem to be very abundant from reports received, not being restricted to animals and their harboring places, but proving a general nuisance to man and entering homes.

A MIDGE (Chironomus niveipennis Fab.)

Wyoming

Paul R. Needham (June 21): This species has been reported from Yellowstone Park, with the statement that they do not bite or bother in any way except by blocking one's eyes, nose, and mouth. They are about the above quarters by the millions. Determination was made by Dr. O. A. Johannsen.

CHIGGERS (Trombicula tlalzahuatl Murray)

Missouri

L. Haseman (June 27): Chigger complaints from towns generally distributed over the State are being received. They seem prevalent about gardens, poultry yards, meadows, etc. It seems as if the past year's chigger attack will be repeated this year.

CATTLE

SCREWORM (Chrysomya macellaria Fab.)

Texas

O. G. Babcock (June 13): This species has replaced the black blow-fly almost entirely. It was very numerous a couple of weeks ago, at Sonora, but has been reduced to very small numbers owing to the dry hot weather and practically no summer rains. Very few cases of myiasis in animals have occurred to date. Considerable trapping is being done by the ranchman. (July 20): Screwworm cases have been at a minimum for the past four weeks. No cases have occurred on the Experiment Station ranch. On overstocked ranches where no trapping or carcass burning is being carried out the screwworm cases are the most numerous. New cases are continually showing up. Few flies are present.

STABLE FLY (Stomoxys calcitrans L.)

Kansas

Geo. A. Dean (July 7): We are receiving every day over Kansas a large number of reports of the biting fly seriously tormenting cattle, horses, and mules. All through the central part of the main wheat belt of Kansas the biting fly, or stable fly, is unusually bad, owing to the fact that there are a great many old strawstacks rotting because there has been an abundance of rain during the last three or four weeks. In some places these flies are so serious that the farmers are obliged to stop work during the heat of the day. Horses and mules are simply frantic.

OX WARBLE (Hypoderma lineatum DeVill.)

wa Fred D. Butcher (July 14): A correspondent reported adults seriously bothering cattle the last week of June.

HORN FLY (Haematobia irritans L.)

w Hampshire P. R. Lowry (July 15): Horn flies have been more numerous than usual at Durham from the latter part of June to the present date, and are annoying cattle considerably.

w York M. D. Leonard (July 2): Flies are quite abundant on a number of cows at North Elba, Essex County, and apparently are causing some annoyance.

Leland J. W. Jones (June 10): This species is quite troublesome on unsprayed stock. Spraying keeps them off most of the day.

ansas Geo. A. Dean (July 7): We are receiving every day over Kansas a large number of reports of the horn fly seriously tormenting cattle, horses, and mules.

exas O. G. Babcock (June 13): Horn flies are averaging around 100 flies to the animal. They are barely holding their own, however, apparently beginning to decrease in numbers. There is very little gathering about the horn at the present time. (July 29): Flies are fairly numerous — from 50 to 100 per animal. The weather has been very dry and hot during the past month.

A HORSE FLY (Tabanus laticophthalmus Macq.)

w York R. W. Wells (June 25): Specimens were sent by A. D. Davies and reported by him to be of serious annoyance to cattle. (June 28): This species was very abundant and seriously annoying horses and cattle throughout the month of June. The greatest abundance was about June 15.

A HORSE FLY (Tabanus lineola Fab.)

w Hampshire P. R. Lowry (July 5): This species is annoying cattle considerably in the field at Durham.

POULTRY

CHICKEN MITE (Dermanyssus gallinae Redi)

exas O. G. Babcock (July 20): Several complaints have come to hand during the past two weeks. Investigations showed that good control measures were not being put into practice.

FOUR TICK (Argas miniatus Koch)

O. G. Babcock (July 20): Blue cugs are fairly numerous in most of the poultry houses. Average infestations prevail at Sonora.

GOATS

SUCKING GOAT LOUSE (Linognathus stenopsis Burm.)

O. G. Babcock (July 20): Where dipping was not practiced the kid crop is severely retarded.

INSECTS INFESTING HOUSES AND PREMISES

TERMITES (Reticulitermes flavipes Kol.)

L. Haseman (June 27): Many reports have come in this year concerning these so-called white ants. Buildings, hotels, and other timbers have been reported heavily infested. These reports seem to be generally distributed over the State, many coming from near the Kansas border, in and about Jackson County.

DERMESTIDAE

M. H. Swenk (July 1): An unusual number of reports of infestation in houses by carpet beetles has been received this spring, especially the past two weeks.



THE INSECT PEST SURVEY BULLETIN

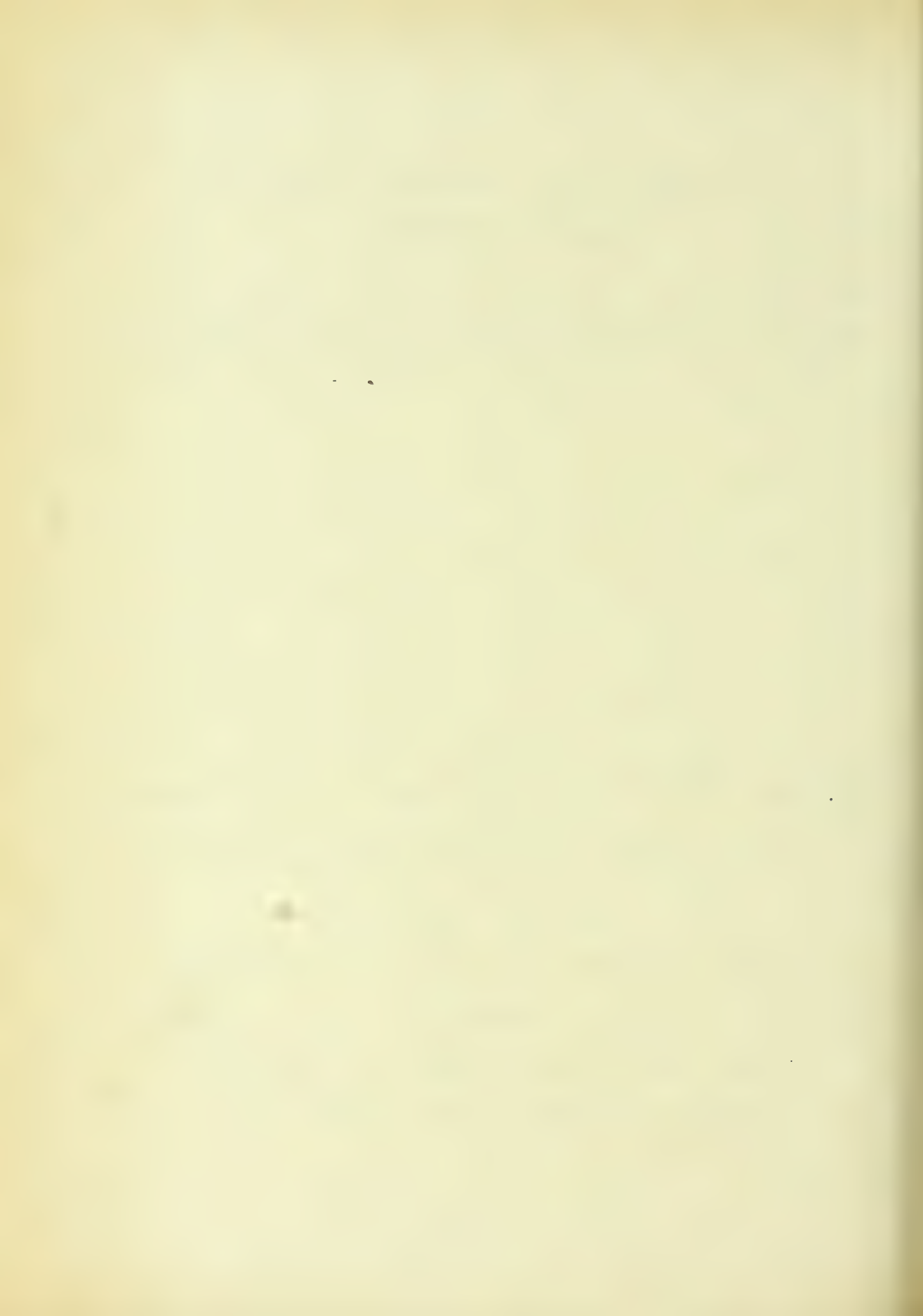
A periodical review of entomological conditions throughout the United States,
issued on the first of each month from April to November, inclusive

Volume 3

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Number 6

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING



OUTSTANDING ENTOMOLOGICAL FEATURES IN THE UNITED STATES FOR AUGUST, 1923.

In this number of the Insect Pest Survey Bulletin statistics on the summer Hessian fly surveys of New York State and Ohio are reviewed. The situation is reported as generally favorable in the Ohio River Valley, while the infestation in New York State is over 7 per cent higher than last year. In North Dakota very heavy infestations were observed throughout Golden Valley County, while in Nebraska this insect is present in the stubble in below normal numbers.

The chinch bug situation in Ohio is very favorable, the pest being very much less numerous than last year. Serious local damage occurred in southern, central, and north-central Illinois, and a very serious movement of the chinch bug was observed late in July in southeastern South Dakota, while both southeastern and northeastern portions of Nebraska are experiencing rather heavy chinch bug damage.

The corn earworm, though not as serious as in 1921, is generally prevalent over the eastern States. In the Ohio River Basin, especially in southern Illinois and Indiana this pest has done quite serious damage to tomatoes, while in Georgia this pest is doing even more damage to cotton than the boll weevil in some of the northern counties.

The stalk borer is unusually prevalent throughout New England, the Ohio River Basin, and the Upper Mississippi Valley, damaging a great variety of plants, particularly corn and herbaceous flowers, dahlias and zinnias being most seriously damaged.

The garden webworm continued throughout August to be a serious pest to alfalfa in the Mississippi River Valley from Nebraska southward to Texas.

Midsummer reports on the cotton boll weevil are reviewed in this number of the Bulletin. About 30 per cent of the total number of reports received from the cotton belt indicate heavy damage by this pest.

The cotton leafworm appeared about two weeks earlier than usual throughout the northern part of the cotton zone, while on the other hand the cotton crop was about 10 days late in its development. Owing to these conditions rather serious injury by the puncturing of the bolls is reported from the greater part of the upper cotton zone.

The apple and thorn skeletonizer is appearing in a most unusual epidemic throughout New England and southward to New York and New Jersey. In New England it is reported as having skeletonized fruit trees to such an extent that the damage is easily observable in passing along the railroads or highways. It is reported about the middle of August for the first time in northern New Jersey.

The fall webworm is also occurring in unusual abundance throughout New England and the Ohio River Valley.

The European red spider is now seriously abundant throughout New England, southward to Maryland, ^{and} West Virginia, and westward to Ohio.

The Mexican bean beetle is reported from Adams, Highland, Pike and Scioto counties in Ohio and is substantially spreading in the previously infested States.

The bagworm is generally serious throughout the Middle Atlantic, southeastern and Ohio River States, damage extending westward to Missouri.

OUTSTANDING ENTOMOLOGICAL FEATURES IN CANADA FOR AUGUST, 1923.

Aphids generally are unusually numerous this year on all kinds of vegetation in Nova Scotia, and much apprehension is being shown on the part of orchardists and growers with regard to the numbers of several species of economic importance. The green apple aphid is more numerous in the Annapolis Valley than it has been since 1913. The rosy aphid is likewise very numerous. The potato aphid and the turnip aphid are very abundant, but a fungous disease induced by warm, cloudy weather during the first two weeks of August checked their numbers to a very considerable extent.

The red spider has seldom, if ever, been more injurious to small fruits than it has been this year in the Niagara district of Ontario. Black currants and raspberries are suffering particularly, the foliage turning brown, becoming scorched, and the fruit crop in many instances being almost a complete failure.

The rose leafhopper, which occurred in outbreak form in apple orchards in eastern Ontario early this season, has been reduced to insignificant proportions through natural agencies. Parasitism has been very heavy.

The lesser migratory grasshopper continues in the ascendancy at many points in Canada. The outbreak in the southern Okanagan Valley of British Columbia is particularly severe and seems to be extending into more northerly points in the same valley. In southern Alberta and Saskatchewan the outbreak is continuing, engendered to some extent by migrations from certain points in northwestern United States. In Prince Edward Island this species has for the second year in succession caused a great deal of trouble in Kings and Queens Counties, covering an area of approximately 100 square miles.

The clover-seed chalcid is proving to be more widely distributed in southern Alberta than formerly. In some fields at least 20 per cent of the pods contain larvae.

The fall webworm appears to be numerous everywhere in southern Manitoba this year and also in the eastern townships of Quebec.

The spruce budworm is occurring abundantly in the neighborhood of Victoria, B.C. A heavy outbreak is expected from this insect next year in this locality and at other points in the coast sections.

The black walnut caterpillar has occurred in outbreak form in western and southwestern parts of Ontario. Many walnut trees throughout this area have been completely stripped of foliage.

A syrphid, close to Eumerus strigatus Fallem, has been reared from the roots of iris infested with the iris borer from Toronto, Ont. In all probability this insect is European in origin.

CEREAL AND FORAGE - CROP INSECTS

MISCELLANEOUS FEEDERS

GRASSHOPPERS (Acridiidae)

h Dakota R. L. Webster (August 3): County agents report damage in Pierce, Mercer, and McHenry Counties.

aska M. H. Swenk (August 1-15): Grasshoppers, mostly Melanoplus bivittatus, began to be complained of in Furnas and surrounding counties early in August. There have been complaints of grasshopper injury in other parts of western and central Nebraska, but on the whole these insects are less injurious than usual this year.

us M. C. Tanquary (July 23): Reports of grasshopper injury continue to come in from several counties of western Texas.

WHITE GRUBS (Phyllonhaga spp.)

sachusetts A. I. Bourne (August 23): Numerous complaints have come to this office relative to unusual abundance of white grubs from very many points throughout the State. Franklin, from East Wareham, finds grubs "working in grass land in astonishing numbers. In one area of about two acres, they had eaten off all the roots of the grass so that the turf could be rolled back easily like a carpet, exposing the grubs in such numbers that they could have been gathered by the bushel." Complaints of these insects practically killing large areas in lawns have been received from several of our correspondents. One writes: "The grass in spots has died altogether, looking as if it had been burnt by the sun. Flocks of robins and other birds have been seen picking at the spots as if seeking grubs or worms. The layer of turf is loose from the layer of earth just beneath it. Running the hand between the turf and the earth will separate the turf as readily as if one ran the hand between two sheets".

a F. A. Fenton (July 28): The June beetle, as predicted, has appeared in swarms in southeastern Iowa in the counties bordering the Mississippi, where they have defoliated large tracts of woodlands.

WIREWORMS (Elateridae)

sachusetts A. I. Bourne (July 25): Wireworms are occasionally causing considerable injury, although there is no general or widespread outbreak. Doubtless the injury is somewhat aggravated in most fields by the protracted drought, which has weakened the plants so that they have not been able to revive after early injuries by these insects.

WHEAT

HESSIAN FLY (Phytophaga destructor Say)

York

C. R. Crosby: Owing to unpreventable conditions, it was necessary to restrict the Hessian fly survey this year to eight counties in the western part of the State. These indicate that the average infestation for this region was 8.5 per cent compared with an infestation in 1922 of 1.2 per cent (see Vol. 2, page 195) and 5.2 per cent in 1921 (see Vol. 1, page 182). The infestation, by counties, is as follows:

Genesee	-	5.33	Wayne	-	18.35
Wyoming	-	1.60	Ontario	-	21.89
Monroe	-	7.74	Chautauqua	-	0.00
Livingston	-	2.40	Yates	-	10.67

H. A. Gossard (July 25): The annual wheat survey was carried into 298 wheat fields, distributed over 32 counties. Hessian fly was found to be well under control in all counties except in a few in northeastern Ohio, where considerable early seeding was made last year. There is a distinct increase in infestation in Ashland, Lorain, Summit, Portage, Columbiana, and Wayne Counties. In the northwestern counties, where the county agents carried on an educational campaign, the infestation has been reduced to a very low figure by observing the proper seeding dates. Henry County reduced its infestation from 40 per cent in 1922 to 2 per cent in 1923, Sandusky County from 52 per cent to 7 per cent, and Putnam County from 39 per cent to 5 per cent. Wood County in this northwestern section had one field sowed too early, with 94 per cent of the straws infested and most of them lodged. Fulton County had one field sowed September 7, with 82 per cent of the straws infested, and another seeded too early had 46 per cent infestation. The reduction over northwestern Ohio, therefore, was due to observing the proper seeding dates and not to parasitism or natural factors. The State average of Hessian fly infestation is 4.4 per cent, compared with 10.9 per cent in 1922.

orth
kota

C. N. Ainslie (July 27): Every field in Golden Valley County examined was heavily infested in June just as wheat was jointing, and a brood of flies has since attacked the grain again. The limit of attack is unknown at present.

braska

M. H. Swenk (August 1): The Hessian fly is now present in the wheat stubble in supernormal numbers. During July the infestation was traced in the Platte Valley west to Dawson County, it being present, in fact, in Furnas, Gosper, and Dawson Counties in greater numbers, on the whole, than in the counties intervening between them and the principal area of heavy infestation, which includes Cass, Otoe, Nemaha, Richardson, Johnson, and Pawnee Counties.

WHEAT-SHEATH GALL JOINTWORM (Harmolita vaginicola Doane)

Ohio H. A. Gossard (July 25): The wheat-sheath worm is considerably more numerous in eastern Ohio and will reach from 5 to 10 per cent in some fields that were seeded quite late.

WHEAT-HEAD ARMYWORM (Heliophila albilinea Hubn.)

Iowa C. J. Drake (July 27): The wheat-head armyworm has appeared in considerable numbers in timothy fields near Ainsworth. In one field the timothy heads were practically all destroyed by this insect.

WESTERN WHEAT SAWFLY (Cephus cinctus Nort.)

North Dakota R. L. Webster (August 3): The Burke County agent reports that infestation running as high as 80 per cent has been found in this county. (August 13): Severe damage was reported from Burke, Ward, Bottineau, and Towner Counties.

GREAT PLAINS FALSE WIREWORM (Eleodes opaca Say)

Nebraska M. H. Swenk (August 1): The beetles of this wireworm have not appeared in as large numbers as were expected from the amount of serious injury done to the winter wheat in the southwestern part of the State last fall and spring. This indicates a probable reduction in the amount of injury that will be done to the wheat crop to be seeded this fall in that part of the State.

Texas M. C. Tanquary (July 23): A correspondent from Carson County reported in early June that he had had 300 acres of wheat destroyed by this insect.

ENGLISH GRAIN APHID (Macrosiphum granarium Kby.)

Nebraska M. H. Swenk (August 1): Following the unusual abundance of the English grain aphid on wheat in southeastern Nebraska from June 18 to about the first of July, a local outbreak of the same insect occurred in the western part, in Cheyenne County, about the middle of July, but it was not nearly so extended or intense as was the earlier infestation in the southeastern part of the State.

CORN

CHINCH BUG (Blissus leucopterus Say)

Ohio H. A. Gossard (July 25): Chinch bugs were found to be present in rather limited numbers, being greatly reduced below their numbers one year ago. We have had very few inquiries about them, and while they could be found in limited numbers in most of the western and northern counties during the wheat survey, they were not sufficiently numerous to threaten corn anywhere.

- Indiana J. J. Davis (August 22): Eggs of the chinch bug were abundant at Monticello on August 7. Very few eggs of the second generation had hatched at that time. This is representative of the central section of this State.
- Illinois W. P. Flint (July 26): Rains caused a great variation in the number of chinch bugs throughout the State. Serious local damage was done in southern, central, and north-central Illinois. In many cases from 1 to 10 acres of corn adjoining wheat was killed at harvest time where no barriers were used. At the present time indications are that the second brood will be very abundant.
- Iowa F. D. Butcher (July 24): One farmer in Page County reported seeing a few chinch bugs in his oat field.
- F. A. Fenton (July 28): The chinch bug is present in injurious numbers in the southeastern part of the State. The present distribution of this pest is greater than that of last year, showing that it is on the increase in this State.
- Missouri F. D. Butcher (July 24): The county agent at Maryville reports that chinch bugs are injuring corn about 7 miles south of the Iowa line.
- A. C. Burrill (August 25): Chinch bugs have been reported as serious from the following counties: Andrew, Buchanan, Caldwell, Clay, Davies, DeKalb, Gentry, Ray, Adair, Chariton, Macon, Livingston, Pike, Ralls, Bates, Boone, Maries, Miller, Morgan, and Lincoln.
- South Dakota C. N. Ainslie (July 27): The bugs are moving by the millions into corn during July in Charles Mix County, and although the farmers are doing much to check them, much damage will doubtless be done. They were reported as far north as Mitchell and also from Gregory County. A number of adjacent counties are infested.
- Nebraska M. H. Swenk (August 1): The chinch bug has been destructively abundant during July in three separated areas of the State. One of these areas, in the southeastern part of the State, includes Richardson, Pawnee, Gage, and eastern Jefferson Counties, and extends northward into southern Nemaha and southern Lancaster Counties. The centers of injury in this area are around Humboldt, Auburn, Table Rock, Pawnee City, Wymore, Adams, and Firth. There is also some local injury in Saline County. A second area lies in south-central Nebraska and includes Franklin and Harlan Counties, around Riverton, Alma, and Huntley, with some local injury in Gosper County. The third area is in the northeastern part and includes eastern Keyapaha, all of Boyd, northeastern Holt, and western Knox Counties. The bugs began leaving the small grain for the corn in the first area about July 4, a few days later in the second area, and about July 12 in the third area. The migration had practically ended in the first two areas by July 25, but was still in progress in the third area at the end of the month. On the whole, the chinch bug has done more injury to corn in Nebraska this month than at any time since the summer of 1910. Weather conditions continue favorable



for these pests, and if their present numbers are augmented normally by the second generation during August, very menacing numbers of chinch bugs will go into hibernation in these infested areas this fall. (August 1-15): The chinch bug continued to do injury to corn in the second area of infestation during the first week in August in diminished intensity, extending west into Furnas and north into Dawson Counties. By August 10 the second brood developing in the corn was under way.

CORN EARWORM (Heliothis obsoleta Fab.)

E. M. Patch (August 1): The county agent from Freedom writes: "This pest has quite a foothold in this town."

C. R. Crosby (July 18): A correspondent from Middletown says: "This grub is raising h___ with my corn."

W. E. Rumsey (August 15): Early sweet corn at Morgantown shows at least 10 per cent of the ears attacked.

H. A. Gossard (August 20): We had an inquiry from Cleveland July 26 for control measures for this pest, also from Brunswick August 1, and from Lakewood August 15. This insect is injurious this season over southern Ohio, though not so damaging as it was in the summer of 1921.

W. E. Emery (August 1): This insect in Dona Ana County is very abundant and is doing considerable damage to the ear corn. In the northern part of the county where corn is tasseling about 20 per cent of the tassels have been destroyed.

STALK BORER (Papaipema ritela Guen.)

E. M. Patch (July 21): A report from South Portland says: "Ten per cent or more of my tomato plants are riddled by them. Lately I found them working in the potato tops." (July 30): I found about 50 in potatoes and some in sweet corn. (July 31): A report has been received from North Haven. (August 2): A report has been received from Richmond.

A. I. Bourne (August 23): The potato or corn stalk borer is practically through its work for the present season. The larvae are nearly mature and beginning to leave the plant. This insect has apparently been unusually abundant this year. Many more complaints have been received than normally from all sections of the State. As I may possibly have stated before, this may be in some measure due to the fact that interest is awakened in all borers in corn from the publicity given the European species, but from our personal observation this species was much more abundant this year than normally.

- de Island A. E. Stene (August 18): Another insect that is rather common this year is the common stalk borer. We are getting specimens of this almost every day with the inquiry as to whether it is the European corn borer. It is apparently fairly abundant and attacks of it are recorded on corn, potatoes, and peppers.
- necticut A. G. Davis (July 19): A report has been received from Torrington of this insect attacking field and sweet corn. It is usually not noticed. The crop is damaged to the extent of 1 per cent.
- W. E. Britton (August 21): This insect has been reported from Waterbury, Somers, Hamden, and Stratford as attacking corn, tomato, and pepper. It is rather more abundant than in an average year.
- o H. A. Gossard (July 25): The common stalk borer was received from all over the State.
- iana J. J. Davis (August 22): Most of the reports received the last month are of nearly mature larvae in large corn stalks, where they are doing little damage.
- inois W. P. Flint (July 26): The common corn stalk borer has been sent in from many localities from small grain, corn, and ornamental plants.
- a F. A. Fenton (July 28): The stalk borer has caused more damage to various plants this year than it has for the past five years. Several corn fields have been ruined, and in others the pest has been present in the outer rows. It is also reported in oats and such ornamental plants as cosmos and dahlia, and also has done some injury to tomatoes.
- souri L. Haseman (July): This pest was very abundant and destructive a little earlier, and many complaints about it were answered.
- raska M. H. Swenk (August 1): During the second week in July there was some injury to small grains and corn by the common stalk borer. The amount of damage done by this insect was not very great, however.

ARMYWORM (Cirphis unipuncta Haw.)

- raska M. H. Swenk (August 1-15): During the first week in August the true armyworm appeared in Holt and Scottsbluff Counties, doing considerable local damage in late oat fields. The armyworm outbreak, however, was not at all general.

ALFALFA AND CLOVER

ALFALFA WEEVIL (Phytonomus posticus Gyll.)

- ifornia California Weekly News Letter, Vol. 5, No. 15 (July 28): An investigation conducted by the State Department of Agriculture has revealed the fact that the alfalfa weevil exists in one field

in Sierra County adjoining the Nevada State line. The infestation is the result of the natural spread of the weevil from the alfalfa fields in the vicinity of Verdi, Nev. Fortunately, the alfalfa weevil still remains on the east side of the Sierra Nevadas, and the same natural barriers which acted as a measure of protection when the weevil was confined to Nevada are effective, even in the face of the infestation in Sierra County.

California Weekly News Letter, Vol. 5, No. 16 (August 11): In 10 days at inspection stations on the California-Nevada line, maintained by the California Department of Agriculture, there were taken from 12 automobiles 126 live alfalfa weevils.

FALL ARMYWORM (Laphygma frugiperda S. & A.)

F. S. Chamberlin (August 10): Report of injury to young corn has been received from Quincy. The crop was badly damaged.

GARDEN WEBWORM (Loxostege similalis Guen.)

C. J. Drake (July 27): The garden webworm has appeared in considerable numbers during the past week. At Melbourne and Woodbine it has been reported as destroying fields of alfalfa. At Knoxville and Woodbine some patches of sweet corn and parts of corn fields have been severely injured. Most of the caterpillars are rather large and almost mature at this time.

Since writing the above, a letter from Audubon, dated July 26, states that the garden webworm practically destroyed a 40-acre field of alfalfa in less than a week. I have just received another letter from the county agent of Pottawattamie County, stating that a large portion of the second crop of alfalfa in that county has been destroyed.

M. H. Swenk (August 1): During the two weeks from July 13 to July 26 many fields of alfalfa in eastern Nebraska were badly damaged by this pest. The worms, as usual, spun the tops of the plants with webbing and ate the leaves. The injury was confined to the part of the State lying east of the 99th meridian, and seemed to be quite general over this area. Reports of injury were especially common from Richardson, Pawnee, Gage, Jefferson, Thayer, Buffalo, Merrick, Platte, Sarpy, Douglas, Washington, Burt, and Dakota Counties. Only the second crop of hay was affected, especially those fields that were not cut until about the first of July. (August 1-15): Injury in alfalfa by the second brood of the garden webworm continued with reduced intensity during the first 10 days of August. Before the last of the reports of injury of the second brood were received from northern Nebraska, great swarms of moths had appeared in southern Nebraska, and are still flying at the present writing, indicating the probability of continued injury by the third brood of the webworm late in August and early in September.

Kansas, J. R. Horton (August 6): Since July 23 or somewhat earlier
Oklahoma, Texas, webworms have been relatively scarce; injury has practically
New Mexico ceased and the second brood of moths is on the wing. A very
heavy flight of moths was noticed all the way from Reno and
Sedgwick Counties, Kans., to and including northeastern New
Mexico and the Oklahoma and Texas Panhandles. It looks as
though alfalfa and other forage crops and truck gardens might
suffer another severe attack by this insect.

Kansas M. C. Tanquary (July): During the latter part of June and the
first of July there were reports of serious infestations of this
insect on cotton from Lamar, Panola, and other East Texas counties.

EUROPEAN CORN BORER (Pyrausta nubilalis Huëbn.)

Massachusetts A. I. Bourne (August 23): The European corn borer, from present
indications, would seem to be having a year of practically normal
abundance and about average injury, although it has been reported
that the area of severe injury occurring is somewhat larger than
last year, as would be expected. It is rather early, though, to
make any definite prophecy relative to this second brood.

Ohio H. A. Gossard (July 25): First and second instar larvae of the
European corn borer have recently been found in Lake County.
Moths had issued in the laboratory at Geneva a day or two before
June 29 but had not commenced laying eggs at that time. (August
20): Most of the moths of the European corn borer brood have
emerged in most of northern Ohio and at the present time eggs
are found upon the corn blades and the larvae are found in the
corn stalks and, under some circumstances, in weeds where corn
is not available. Notwithstanding a thorough burning campaign
and clean-up in Ashtabula County last spring, there is an in-
creased number of borers this season, clearly indicating that
there were more moths in this area the present season than were
there last year. Since most of the corn stalks were destroyed
in the clean-up, it seems possible, and perhaps probable, that
a good many caterpillars are carried over the winter hidden in
weeds, and a need for the prompt destruction of corn stalks as
soon as the ears are removed is emphasized by this development.

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

New Mexico R. Middlebrook (July 20): The species Diatraea saccharalis and
D. zeacolella have been reported from the eastern counties of
the State. They are getting worse each year. The crop is
damaged 30 per cent.

A STALK BORER (Diatraea lineolata Walk.)

New Mexico J. R. Horton (August 1): Corn damage, estimated by counting 100
stalks in each field, covering most of Quay County, varies from
no stalks tunneled at all in some fields to as high as 85 per
hundred in others. Tunneled stalks contained from 1 to 6 borers
each. This injury is all by the first summer brood of borers.

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About 1 to 2 per cent of stalks of milo is damaged in some fields - as high as 10 per cent in first two or three rows bordering infested corn, in one field.

CLOVER ROOT-BORER (Hylastinus obscurus Marsh.)

H. A. Gossard (August 20): The clover root-borer was received from Strongsville August 6, where it had destroyed a field of clover. I also received the same insect two or three days ago from a Wayne County field, where it had reduced the crop to less than one-half.

J. J. Davis (August 22): Injury has been reported from Connersville in Fayette County.

CLOVER-LEAF WEEVIL (Hypera punctata Fab.)

T. H. Parks (August 21): This beetle was sent by the Erie County agent August 14, with the statement that the insect is working on sweet clover. He saw one sweet clover field that had been pastured pretty closely by the insect. It is unusual in Ohio for the beetles of this species to cause such damage at this time of year.

CLOVER-ROOT CURCULIO (Sitona hispidulus Fab.)

J. J. Davis (August 22): Injury to roots of alfalfa reported from Hartford City, in Blackford County.

W. P. Flint (July 26): Sitones (sp?) has caused serious damage to the roots of old stands of alfalfa in central Illinois.

CLOVER-SEED CATERPILLAR (Laspeyresia interstinctana Clem.)

C. J. Drake (July 27): The clover-seed caterpillar has been reported in Washington County. It seems to be numerous in several fields.

W-MARKED CUTWORM (Noctua clandestina Harris)

W. P. Flint (July 26): This insect has been reported from several sections in northern Illinois as destructive to sweet clover where this plant is grown for seed crop. Parasites are fairly abundant.

MISCELLANEOUS

COTTONY GRASS SCALE (Eriopeltis festucae Fonsc.)

C. R. Crosby (July 16): Grass infested with this pest was received from Gravesville.

A SWEAT-BEE (Halictus virescens Fab.)

G. M. Stirrett (July 19): This pest was reported injuring lawns in LaFayette July 8 by throwing up little mounds of earth.

ARGUS TORTOISE-BEETLE (Chelymœnha cassidea Fab.)

C. R. Crosby (July 23): This insect is doing considerable damage to oats in Chautauqua County.

FRUIT INSECTS

APPLE

GREEN APPLE APHID (Aphis pomi DeG.)

- Massachusetts A. I. Bourne (August 23): Green aphids have not been unusually abundant over the State as a whole this season but Mr. Cobb, of Littleton, reports that in his orchards, particularly on young trees, they have been exceptionally bad, and apparently badly checked the growth in the young orchards.
- New York G. E. Smith (August 11): Growers are still applying the later summer application for the green aphid. A few are using lime-nicotine dust. The females continue to keep the terminals infested with the young aphids.
- F. H. Bond (August 4): The lice have appeared on apple in serious numbers in some orchards at Oswego.
- H. W. Fitch (August 4): They are very numerous at Sodus on apple. (August 11): They are very abundant on McIntosh, Greening, and Baldwin at Sodus. A special treatment of lime-nicotine dust gave very good control in one orchard.
- R. G. Palmer (August 11): Green aphids are present in many orchards, and some are making special applications for their control in Monroe County.
- A. L. Pierstorff (August 11): The green aphid is reinfesting the apple seedlings and they are still abundant on Spiraea vanhoutti, at Honey Falls.

ROSY APPLE APHID (Anuraphis roseus Baker)

- Ohio H. A. Gossard (July 25): Aphids of many species have been active and conspicuous. The rosy apple aphid attracted attention from many quarters of the State.
- Indiana H. F. Dietz (July 18): The rosy apple aphid was unusually bad this year and damaged between 15 and 25 per cent of the crop in many localities before it migrated.

CODLING MOTH (Carpocapsa pomonella L.)

- Massachusetts A. I. Bourne (July 25): So far as reports have come in from the different sections of the State, injury from the codling moth to date has been very light indeed. The emergence of the moths of the spring brood was observed to be very

irregular, owing probably to the continued cold weather prevailing during this period of the season. This has resulted in a considerable amount of "side worm" injury, which is slightly larger than is normally the case.

York

G. E. Smith (August 11): The larvae continue to hatch. There is probably more or less of an overlapping of the broods at this time in Orleans County.

R. G. Palmer (August 11): Codling moths are causing severe injury on apples in Monroe County.

R. F. Illig (August 11): In some parts of Wayne County there has been considerable side worm injury.

F. H. Bond (August 11): The larvae have just started to emerge from the fruit in Oswego County.

H. W. Eitch (August 11): First-brood larvae continue to enter the fruit on the shore of Lake Ontario. No second-brood larvae that could be identified as such have been found at Sodus.

Indiana

B. A. Porter (August 6): Second brood larvae began leaving the fruit between August 3 and 6 at Vincennes.

APPLE AND THORN SKELETONIZER (Nemertophila pariana Clerck)

Massachusetts

A. I. Bourne (August 23): Throughout the western part of the State, at least, the pest of outstanding importance at present is the apple and thorn skeletonizer.

Connecticut

E. H. Hollister (July 20): Reports have come from Hartford and vicinity. This is practically the first appearance. Fifty per cent of the foliage is damaged.

Chas. D. Clark (July 24): This is the second brood of this pest and it is found generally throughout Fairfield County. Many leaves contain from 3 to 6 larvae. It is more abundant than last year.

W. E. Britton (August 21): This pest is less abundant in the southwestern portion of the State but is more abundant in the eastern part.

Long Island

A. E. Stene (August 18): The apple and thorn skeletonizer has been sent in from Anthony and has been observed by our field men in various places in Providence and Kent Counties, from the Connecticut line to points three-fourths of the distance across the State.

New York E. P. Felt (July 23): This pest is generally prevalent north to Sandy Lake in the Hudson River Valley, even on widely isolated apple trees in infested areas. Injury is serious north to Claverack and Ravena and probably farther north.

M. D. Leonard (August 12): Badly infested leaves were received from Roy Latham at Orient, L. I., who states that this pest is unusually bad this season. (August 13): P.M. Eastman of the New York Department of Farms and Markets at Cambridge, near Eagle Bridge, reports it abundant on the outskirts of town.

New Jersey M. D. Leonard (August 22): On August 13 I found about 5 per cent of the foliage injured by the apple and thorn skeletonizer in a small apple orchard of about 50 trees at Pompton. This is about 8 miles northwest of Paterson. Last year these trees were under my close observation during the entire growing season and there was no evidence of the pest at that time. As far as I know this is the first record for this State.

TENT CATERPILLAR (Malacosoma americana Fab.)

Massachusetts A. I. Bourne (July 25): The first eggs of the apple tent caterpillar were seen in Amherst on July 3. Since that time they have been found in considerable abundance.

New York Clark Hutchinson (July 21): At Ogdensburg, in St. Lawrence County, most of the caterpillars seemed to be in bushes at first, but later some got into apple trees, though they do not seem to have increased in numbers large enough to do any great amount of damage. I have noticed some farmers spraying their orchards.

New Jersey R. B. Lott (August 5): Egg masses of apple-tree tent caterpillar have been noticed throughout State. They are quite plentiful.

FALL WEBWORM (Hyphantria cunea Drury)

Massachusetts A. I. Bourne (August 23): In Amherst and immediate region it is at least no more abundant than it was last year, if quite as much. From Middlesex County, E. R. Farrar reports that in his estimation the pest is approximately 50 per cent as abundant as last year.

Connecticut M. P. Zappe (August 22): Infestations occur on ash, cherry, apple, etc., in Hartford, Windham, and New London Counties. The webworms are more plentiful than they were last month.

New York Roy Latham (August 6): This species is bad this season. It is on apple, maple, elm, cherry, and other cultivated trees at Orient, Suffolk County.

H. L. McIntyre (August 8): A bad infestation has been reported on a number of willows at Baker's Mills, in Warren County.

R. F. Illig (August 11): The fall webworm is abundant in several localities in Wayne County.

E. W. Mendenhall (August 22): We find them bad in old neglected orchards and in a variety of nut and shade trees in southwestern Ohio. They are noticeable along roadsides.

H. F. Dietz (July 18): The fall webworm is unusually abundant in cities and towns, feeding on shade trees and ornamental shrubbery. In the rural districts it does not seem to be quite as abundant as in cities and towns.

J. J. Davis (August 22): This pest is abundant wherever I have been in the southern half of the State. It is abundant in cities and along roadsides, also in orchards which have not been properly sprayed.

M. H. Swenk (August 1): The first brood of the fall webworm was less numerous and destructive than it has been during the last few years.

TARNISHED PLANT-BUG (Lygus pratensis L.)

M. P. Zappe (August 1): This pest is causing serious injury to apple and peach stock in nurseries, and is also working on the tips of dahlias, at Durham, Willimantic, and Hamden. It seems to be doing more injury than in the average year.

A. L. Pierstorff (August 11): At Honeoye Falls this pest is common on practically all young trees and shrubs in a nursery.

LEAFHOPPERS (Jassidae)

M. D. Leonard and F. H. Lathrop (August 17): Many leaves of young growth were very severely curled on a tree about 15 feet high as a result of the feeding on nymphs at Kinderhook. A number of other trees in an orchard were appreciably affected, but this one was the worst example we have ever seen.

A. L. Pierstorff (August 11): Leafhoppers are abundant on one-year-old nursery trees at Honeoye Falls. Instead of making the characteristic mottled injury, they seem to curl the apple leaves much the same as aphids, but not quite so severely.

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SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Massachusetts A. I. Bourne (July 25): In northern Worcester County Mr. Fiske reports that he is finding the San Jose scale somewhat more prevalent than last year. This, while the only specific report coming to our attention this month, bears out the general impression among the fruit growers which has been held for some time that this pest is gradually coming back into abundance in the State.

Ohio H. A. Gossard (July 25): The San Jose scale has practically disappeared from some neighborhoods where it was rather numerous in southern Ohio when spring opened. On this account some tests of the comparative efficiency of scale remedies are rendered practically worthless because there is no scale on the check trees and no difference can be found in the various treatments. Of course, there may be later developments which will have some significance. Some unsprayed trees in northern Ohio have an abundance of San Jose. (August 20): San Jose scale was received from Shiloh August 2. Specimens of apple were quite spotted over by it.

Indiana B. A. Porter (August 20): Second-brood crawlers began to appear July 20 at Vincennes, on apple, peach, etc. Since August 1 crawlers have been produced in large numbers daily. In orchards where poor control was obtained last winter, branches are beginning to die, and the fruit is badly spotted.

J. J. Davis (August 22): With the new lubricating oils, as well as miscible oils, orchardists are making headway against the scale. There still remain, however, many serious infestations, but most of the orchardists are alive to the situation and will stress dormant oil spraying the coming season. Until last year the scale was not recognized as a serious pest on peach, but this year several peach orchards have become alarmingly infested.

Illinois W. P. Flint (July 26): The season thus far has been very favorable to the increase of this insect and it is showing in large numbers on fruit, branches, and leaves of poorly sprayed orchards.

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Massachusetts A. I. Bourne (August 23): The European red mite is apparently normally abundant generally, with occasional regions of slightly greater abundance. The protracted dry spell which persisted up to the early and middle part of the month was very favorable to their rapid increase, and from some sections of the State estimates of these mites being much more abundant, up to twice as many as last year, have been sent in. A rather curious fact in connection with this pest is that on a block of trees which had been given

a dust treatment, the mites were apparently much more abundant than on adjoining blocks which had been sprayed.

Connecticut Philip Garman (August 1-23): Baldwins show considerable burning at Branford and Wallingford. This pest is more abundant than last year. A dry summer has favored development.

Maryland C. C. Hamilton (August 25): Rains the past three weeks have put the pest well under control, except at Havre de Grace. Here there have been only a few light showers, and the mites are abundant and still doing damage. Indications are that there will be severe injury to fruit buds on peaches. Cool nights and damp weather the last of July caused the mite to migrate to the limbs and lay winter eggs there. These have hatched. Infestations occur at Havre de Grace, Easton, Berlin, and College.

West Virginia W. E. Rumsey (August 15): Apple, maple, box, and other plants are seriously affected, and have been since early spring, by an undetermined red spider at Morgantown.

Ohio H. A. Gossard (July 25): The European red mite has appeared very numerous in northern Ohio and is known to be present in great numbers in orchards as far east as Youngstown and as far west as Toledo. It is causing severe browning of the leaves of apple, plum, and peach. Members of our staff have given it personal attention at Youngstown, in the peach orchards about Danbury, and in plum and apple orchards at Waterville. It was reported very numerous on specimens of apple leaves sent in from Toledo July 12.

G. A. Runner (August 11): This insect is abundant on many fruit trees and ornamentals in the vicinity of Sandusky. Unsprayed grapevines have been observed which were heavily infested, but injury to foliage seemed slight compared to injury to foliage of peach and apple. It is also abundant in many apple orchards in counties bordering on Lake Erie. Foliage injury is severe in orchards in which lime-sulphur has not been used in summer sprays.

APPLE FLEA-WEEVIL (Orchestes pablicornis Say)

West Virginia W. E. Rumsey: (The locality given in the Insect Pest Survey Bulletin Vol. 3, page 126, should be Raymond City instead of Morgantown.)

Michigan R. H. Pettit (July 10): I have to report that our single case of apple flea-weevil seems to be a very difficult one indeed to control. Repeated sprays of powdered arsenate of lead at the rate of $1\frac{1}{2}$ to 2 pounds to 50 gallons of water are reported to have failed thus far. The insect is spreading in spite of the sprays. Samples sent in show the leaves to have been badly eaten after these sprays were put on.

WILLOW CURCULIO (Cryptorhynchus lapathi L.)

Michigan

R. H. Pettit (August 9): Yesterday we discovered some apples that had holes eaten in them and in the course of an hour or two we found that Cryptorhynchus lapathi was the culprit. Today a gentleman from Lansing brought in a number of plums with similar holes eaten in them and a specimen of Cryptorhynchus that he had actually caught in the act. He said a large proportion of his ripening plums were blemished in this way. The injury amounts to more than a blemish, however, since in the case of the plum brown rot immediately shows the work of the beetle.

A LEAF-BEETLE (Metachroma interruptum Say)

Indiana

J. J. Davis (August 22): Injury to apples by an unknown insect was first reported by Dr. B. A. Porter, who found, on July 13, considerable injury to the fruit of Grimes trees. The surface is more or less covered with gouged-out places, often these being confluent so that eaten areas up to considerable size might be found on an apple. The insects responsible were not found. When Porter showed this infestation to me, a couple of weeks later, no additional injury had been done, although the total injury to Grimes fruit in this orchard was considerable. Specimens were submitted to W. P. Flint, who had reported similar injury by Metachroma interruptum Say, in western Illinois a year ago and he pronounced it as certainly the work of that beetle. According to Blatchley, it was collected but once in Indiana, namely in Vigo County, in the west-central part of the State, June 16. He also notes that it had not, previously to his record in Indiana, been recorded east of Kansas. This beetle is one which may become an important pest. The orchard where first found at Decker, Knox County, had been thoroughly sprayed according to the recommended spray schedule.

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

Connecticut

Philip Garman (August 20): This pest is severely injuring a large pear orchard at Southington.

New York

E. W. Pierce (August 4): Hard-shell nymphs and flies of the second brood are appearing in considerable numbers in Ontario County. (August 11): The dry weather has caused psylla to multiply rather rapidly.

G. E. Smith (August 4): The weather has been very favorable for pear psylla development, and considerable honeydew covers fruit and foliage in some orchards in Orleans County.



H. W. Fitch (August 4): This pest is abundant enough to cause many growers at Sodus to spray.

F. H. Bond (August 4): At Oswego the psylla has become had in some orchards. (August 11): The psylla outbreak seems to have subsided.

R. J. Palmer (August 11): The psylla in Monroe County has multiplied rapidly.

P. J. Chapman (August 11): In Genesee County the pear psylla is on the increase with favorable weather for its development, but commercial orchards have them fairly well controlled.

PEAR SLUG (Caliroa cerasi L.)

Ohio H. A. Gossard (July 25): The pear slug was received from Apple Creek July 14 on pear. (August 20): This pest was received from Columbus August 17 on pear.

Indiana B. A. Porter (July 27): Several acres of cherry orchards have been completely defoliated by the second-brood slugs at Vincennes.

Nebraska M. H. Swenk (August 1): Numerous complaints of injury by the pear slug have been received during the month.

PEACH

PEACH-TWIG MOTH (Anarsia lineatella Zell.)

Indiana H. F. Dietz (July 18): The peach-twig borer is becoming quite a serious pest in young peaches in the southern part of the State.

Texas F. C. Bishopp (August 25): This insect has caused some damage to peaches in the vicinity of Dallas this year, but their abundance is not nearly so great as during last season, when over 75 per cent of the peaches were infested.

California California Weekly News Letter, Vol. 5, No. 15 (July 28): The season of 1923 has not been marked by serious damage from the peach-twig borer and there has not been as much damage to unsprayed orchards as to some sprayed orchards last year. We have no difficulty in controlling the pest with lime-sulphur spray and expect to continue spraying with lime-sulphur in the spring, as in the past, since under conditions at Ontario such treatment insures against severe damage from either "curl leaf" or twig-borer.

SHOT-HOLE BORER (Acolytus rugulosus Ratz.)

New York Henry Dietrich (July): The shot-hole borer is fairly injurious in peach orchards at Appleton.

Ohio H. A. Gossard (July 25): Specimens of this pest came from Sullivan June 25 where it was attacking cherry, from Toledo, June 27, and from Marion July 20. (August 20): Specimens came from Marion August 3 on cherry and August 13 from Pleasant Hill on plum. An inquiry without specimens was received from Danbury July 24 regarding control measures for this species.

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia O. I. Snapp (August 20): The second generation will be very small this year and of little economic importance. The second generation did not put in its appearance this year in the Georgia Peach Belt until the peach crop had been harvested. About 8,600 cars of peaches were shipped from Georgia this season, and the general quality of the fruit was the best since 1918. The curculio has been remarkably well controlled.

A "TUMBLE BUG" (Phanaeus carnifex L.)

New Mexico W. E. Emery (August 1): This insect is doing considerable damage to ripening fruit, in some places at least 50 per cent to peaches and plums, and was also noted on the corn, working on the tassel, where at least 10 per cent of the corn tassels were destroyed in Dona Ana County.

GREEN SOLDIER-BUG (Nezara hiliaris Say)

Maryland C. C. Hamilton (August 22): Determination was made by comparing injury with that reported in Ohio (Bul. 310 on the green soldier-bug). The variety Hale is injured worst, although all varieties are attacked. Injury ranges from severely deformed fruit to that with only a few feeding punctures. Infestations occur at Belair and Havre de Grace.

Ohio H. A. Gossard (August 20): The green soldier-bug was taken in a Wooster locality August 18 injuring peach. An inquiry was received from Port Clinton July 23, regarding an outbreak of this pest on peach, and a later investigation by one of the members of our staff proved that a rather mild outbreak was occurring in a few orchards.

G. A. Runner (August 11): Injury to peaches by the green soldier-bug has been observed in several orchards in the Ottawa County peach district.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Georgia O. I. Snapp (August 20): At Fort Valley the San Jose scale has increased rapidly during the summer months. Some growers, dissatisfied with the results from liquid lime-sulphur or its substitutes, will use lubricating-oil emulsion this winter.

ORIENTAL PEACH MOTH (Laspeyresia molesta Busck)

Connecticut W. E. Britton (August 24): Many terminal shoots have been tunneled by larvae at Greenwich. A few were noticed last year in the same section. They are more abundant than in an average year.

CHERRY

BLACK CHERRY APHID (Myzus cerasi Fab.)

Wisconsin A. A. Granovsky (August 18): Cherry aphid attacks cherry orchards year after year in the locality of Sturgeon Bay. Injury is largely done in a localized spot. Injury may be considered as severe, producing yellowing and defoliation of trees, as well as reducing the growth of terminal shoots and, consequently, the yield of cherries. Early cherries were more infested than late varieties.

PEAR AND CHERRY SAWFLY (Caliroa cerasi L.)

Indiana J. J. Davis (August 22): The work of this insect, resulting in complete defoliation, is evident throughout the southern part of the State.

CHERRY FRUIT FLY (Rhagoletis cingulata Loew)

New York Henry Dietrich (July): There is a considerable amount of infestation this season at Appleton.

H. W. Fitch (August 4): One tree examined at Sodus showed 32 per cent of the fruit infested.

PLUM

PLUM CURCULIO (Conotrachelus nemuphar Hbst.)

Massachusetts A. I. Bourne (July 25): The plum curculio seems to be doing a great amount of injury this year, and in every section of the State reports of normal or somewhat greater abundance than last year are coming in. This particular species seems to be at the present time the outstanding apple pest of the State, and to all appearances is the one farthest from control.

THE HISTORY OF THE UNITED STATES

OF THE UNITED STATES OF AMERICA, FROM THE FIRST SETTLEMENTS TO THE PRESENT TIME. BY JAMES M. SMITH, LL.D., OF THE UNIVERSITY OF CHICAGO.

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CHAPTER I

THE FIRST SETTLEMENTS

The first settlements in the United States were made by the English in 1607, at Jamestown, Virginia. The first settlement in the West Indies was made by the Spanish in 1492, at San Juan, Puerto Rico. The first settlement in the North American continent was made by the French in 1540, at St. Louis, Missouri.

THE SECOND SETTLEMENTS

The second settlements in the United States were made by the English in 1620, at Plymouth, Massachusetts. The second settlement in the West Indies was made by the Spanish in 1500, at Havana, Cuba. The second settlement in the North American continent was made by the French in 1564, at Fort Moultrie, South Carolina.

THE THIRD SETTLEMENTS

The third settlements in the United States were made by the English in 1630, at Boston, Massachusetts. The third settlement in the West Indies was made by the Spanish in 1511, at Santiago, Cuba. The third settlement in the North American continent was made by the French in 1580, at Fort LaSalle, Texas.

The fourth settlements in the United States were made by the English in 1633, at New Haven, Connecticut. The fourth settlement in the West Indies was made by the Spanish in 1514, at Pinar del Rio, Cuba. The fourth settlement in the North American continent was made by the French in 1598, at Fort LaSalle, Texas.

CHAPTER II

THE FIFTH SETTLEMENTS

The fifth settlements in the United States were made by the English in 1636, at Providence, Rhode Island. The fifth settlement in the West Indies was made by the Spanish in 1515, at Matanzas, Cuba. The fifth settlement in the North American continent was made by the French in 1600, at Fort LaSalle, Texas.

Louisiana T. H. Jones (July 24): Infested peach fruit was sent in by Mr. M. J. Voorhies, County Agent of St. Martin Parish, with the report that "we seem to have the same trouble all over the parish."

RASPBERRY

TWO-SPOTTED OBEREA (Oberia bimaculata Oliv.)

New York C. R. Crosby (August 1): A patch of raspberries was badly infested at Skaneateles. (July 12): A small plot was badly infested at Binghamton.

RED SPIDER (Tetranychus spp.)

Ohio E. W. Mendenhall (July 26): Red spider mites are found general in the State, infesting raspberry plants and doing some damage.

EUROPEAN FRUIT LECANIUM (Lecanium corni Bouche)

Iowa F. A. Fenton (July 28): A sample of several raspberry canes was received literally plastered with adult scales of this insect. This scale insect had been a very serious pest on these raspberries.

CRANBERRY

SPOTTED CUTWORM (Agrotis c-nigrum L.)

Massachusetts A. I. Bourne (August 23): The spotted cutworm has done more injury on the cranberry bogs than in any previous year. We find that this insect is most likely to attack bogs that are bared of their winter flowage very late in May or in early June. It has cleaned up the crop of more than 150 acres of bog here this season, reducing the prospective crop by fully 10,000 barrels.

GRAPE

ROSE CHAFER (Macrodactylus subspinosus Fab.)

Massachusetts A. I. Bourne (July 25): The rose chafer has been unusually abundant the present season, practically throughout the State, and has not only caused considerable annoyance by its feeding on roses and grapes, which it normally feeds on every year, but complaints have been received of its injuries to a wide range of food plants, which comprise many of the small fruits, ornamentals, and garden crops, as well as some few reports of its feeding on the foliage of young fruit trees.

New York

M. D. Leonard (July 27): This pest is abundant on bayberry and several other plants outside of Jamaica, L.I., near a pond.

F. J. Whaley (August 4): There were several bad infestations on grape and rose in private gardens during the first week in August at Albany.

Ohio

H. A. Gossard (July 25): The rose bug was perhaps more numerous than usual.

GRAPE LEAFHOPPER (Erythroneura comes Say)

New York

K. E. Paine (August 10): In Chautauqua County on unsprayed or on poorly sprayed vineyards the leafhopper injury is showing very badly and wherever a grower missed a row in spraying a marked difference can be seen.

West Virginia

W. E. Runsey (August 15): Foliage is completely destroyed in some cases and generally seriously injured at Morgantown.

Ohio

H. A. Gossard (August 20): The grape leafhopper was received from Toledo August 15 on grape and also from Columbus August 17.

EIGHT-SPOTTED FORESTER (Alypia octomaculata Fab.)

Ohio

H. A. Gossard (July 25): The eight-spotted forester came from Windham July 6, where it was attacking grape.

Indiana

H. F. Dietz (July 18): The eight-spotted forester has been reported as a serious pest of grapes this year, especially in the vicinity of Indianapolis and Muncie. This is the first time in the past five years that we have had any reports of damage by this pest.

GRAPE-BERRY MOTH (Polychrosis viteana Clem.)

Louisiana

T. H. Jones (July 16): Larvae and injured fruit have been sent in by Mr. M. J. Voorhies, County Agent of St. Martin Parish, with the report that the larvae are "injuring grapes in this section."

GRAPEVINE APHID (Macrosiphum illinoisensis Shim.)

Massachusetts

C. R. Crosby (August 15): Infested grape leaves have been received from Harwich.

New Jersey

M. D. Leonard (June 10): The grapevine aphid is abundant on young leaves and tips of shoots in a small grape arbor at Ridgewood.

1. The first part of the paper is devoted to a general discussion of the problem of the origin of life.

2. The second part of the paper is devoted to a detailed discussion of the various theories of the origin of life.

3. The third part of the paper is devoted to a discussion of the evidence in support of the various theories.

4. The fourth part of the paper is devoted to a discussion of the implications of the various theories.

5. The fifth part of the paper is devoted to a discussion of the future of the study of the origin of life.

6. The sixth part of the paper is devoted to a discussion of the conclusions of the various theories.

7. The seventh part of the paper is devoted to a discussion of the evidence in support of the various theories.

8. The eighth part of the paper is devoted to a discussion of the implications of the various theories.

9. The ninth part of the paper is devoted to a discussion of the future of the study of the origin of life.

10. The tenth part of the paper is devoted to a discussion of the conclusions of the various theories.

11. The eleventh part of the paper is devoted to a discussion of the evidence in support of the various theories.

12. The twelfth part of the paper is devoted to a discussion of the implications of the various theories.

13. The thirteenth part of the paper is devoted to a discussion of the future of the study of the origin of life.

CURRENT

STALK BORER (Papaipema nitela Guen.)

New York

M. D. Leonard (July 17): Mary K. Peters of the Farmingdale School of Agriculture, L. I., reports that a patch of red currants are badly injured by larvae boring in the young canes. She also reports the larvae unusually abundant in corn this year in her section.

PECAN

FALL WEBWORM (Hyphantria cunea Erury)

Georgia

O. I. Snapp (August 18): The fall webworm is unusually abundant in middle Georgia this year, near Hawkinsville, and is doing considerable damage to pecan trees.

John B. Gill (August 2): The fall webworm is very prevalent in pecan orchards in many sections.

PECAN-NUT CASE-BEARER (Acrobasis hebescella Hulst):

Georgia

John B. Gill (August 2): We find that the second brood of the pecan-nut case-bearer has not been so destructive. The first-brood larvae, appearing during the latter part of May and the first week of June, caused very serious damage to the crops in various pecan orchards in southern Georgia and northern Florida. According to our observations the worst infestations occurred around Baccaton, Ga.

PECAN-LEAF CASE-BEARER (Acrobasis nebulella Riley)

Georgia

John B. Gill (August 2): Practically all adults of the pecan-leaf case-bearer have emerged and oviposition has been taking place in peach orchards for some time. The very small larvae are now feeding on the under surface of the leaves, and, judging from the abundance of larvae at this date, the insect will go into hibernation in great numbers. On account of the restricted feeding by the larvae during the late summer, no serious damage is done at this season of the year, but when abundant, the larvae are very destructive to the unfolding buds in the spring. We have succeeded in perfecting a very good control of this pest, and during the next month and early in September many pecan growers in this immediate section will be spraying their orchards for the protection of next year's crop.

HICKORY NUT WEEVIL (Belaninus caryae Horn)

Georgia

John B. Gill (August 2): Pecan growers in Lamar County have reported serious losses to pecan crops through the attacks of the pecan weevil. During the early part of July the writer made a trip through this territory in order to look

into the pecan weevil situation. Larvae were found at varying depths in the soil in pecan orchards, but from observations made it was impossible to predict or determine the infestation of the nut crop for this year. The adults will likely be occurring on pecan trees during the early part of September and will continue their attacks until the advent of cold weather.

LITTLE HICKORY APHID (Monellia caryella Fitch)

Georgia

John B. Gill (August 2): The little hickory aphid has been occurring abundantly on pecan trees during this season. This species appears to confine its attacks to the underside of the leaves, and so far it has not been observed feeding on the young nuts. The foliage of heavily infested pecan trees often becomes drenched with the honeydew exudations. At present this insect is not considered as a serious pest to pecans.

CITRUS

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Louisiana

T. H. Jones: Infested orange leaves were received from J. A. Wogan, New Orleans, July 28, and from J. Verburg, Hammond, August 2. Infested privet leaves were received from Warnerton August 3.

California

California Weekly News Letter, Vol. 5, No. 16 (August 11): A recent quarantine, known as Quarantine Order No. 42, pertaining to the citrus whitefly, was placed on the cities of Sacramento, Marysville, and Yuba City by the State Department of Agriculture. This order was for the purpose of preventing the shipment of any host plants of the citrus whitefly into other parts of the State.

TRUCK - CROP INSECTS

MISCELLANEOUS FEEDERS

BLISTER BEETLES (Meloidae)

Maine

E. M. Patch (July 24): Epicauta pennsylvanica DeG. is reported by Mrs. F. C. Knowles as feeding on potato at Stockholm, and Macrobasis unicolor Kby. is reported by Wendell A. Sharp as numerous in some potato fields this year.

New York

C. R. Crosby (August 1): Epicauta marginata Fab. is reported from Tarrytown as seriously injuring plants in a vegetable garden.



- Pennsylvania T. L. Guyton (July 30): Epicauta cinerea Foerst. is reported from Peach Bottom as doing serious damage.
- North Dakota R. L. Webster (July 13): Lytta nuttalli Say is reported from Kensal as more than usually common.
- Nebraska M. H. Swenk (August 1): The gray blister beetle was reported destroying tomatoes in gardens in Seward County during the last week in July, and the large black blister beetle, Epicauta corvina Lec., was reported as injuring potatoes in Knox County. The striped blister beetle, Epicauta lemniscata Fab., was reported doing injury in gardens in Thayer County during the second week in August.

CUTWORMS (Noctuidae)

- New York Roy Latham (August 6): During the last few weeks there has been an outbreak of Agrotis ypsilon Rott. in Orient, and at present it is the worst ever known here. It is doing great damage in young transplanted sprouts, cabbage, and cauliflower. It is also found in late potatoes and various other crops and weeds. Trenches had to be dug around some fields. I have counted 25 under the small lumps of dirt at the base of a small plant 4 inches high.
- A. M. Hollister (July): Cutworms have done about the most damage of any pest in Saratoga County. In the southern part of the county, where considerable truck gardening is carried on, they have been very troublesome. Many farmers have used the bran, Paris green and molasses poison and in this way have done good control work. It is difficult to make an estimate of the damage done by these pests.
- Ohio H. A. Gossard (July 25): One of the glassy cutworms was received from Conway June 25, where it was said to be attacking beets.

GREEN SOLDIER-BUG (Nezara hilaris Fitch)

- Indiana J. J. Davis (August 22): The green soldier-bug has been reported from sections of the State from the extreme south end to the northeast corner of the State. In most cases it was simply reported as abundant and no apparent injury noted. The first record was from Delphi on July 25. In several localities it was reported on corn, and one correspondent blames these insects for the unthriftiness of one section of this corn field. It was also reported as occurring on peach, but the correspondent has not advised us that injury occurred. At Corydon and south to the Ohio River we found this insect abundant on Lima beans August 20. Young and adults were observed with their beaks inserted in the green pods and in the stem at the base of the pod. The beans have not developed or are deformed in the pods, and as there is no disease present, and since the injury is what we might expect, it seems very likely that the soldier-bug is responsible.

Michigan Eugenia McDaniel (August 18): The green soldier-bug has been received this morning from Cass County, Mich., where it is said to be attacking beans in the field. The insects puncture the young pods and are causing considerable injury.

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Florida F. S. Chamberlin (August 6): Pods in one field are severely damaged by the bugs at Quincy.

POTATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

Massachusetts A. I. Bonfne (July 25): Infestation has been rather uneven throughout the State. In this particular region, Amherst, the pest has been somewhat more abundant than for several years, whereas from other sections of the State, notably in Barnstable County, there have been so few beetles that up to the first or middle of July it had not been necessary to apply any arsenate of lead for their control. The pest is apparently not more than normally abundant except in isolated areas.

New York Roy Latham (July 15): Slugs have not been known to be so abundant in years in Suffolk County. Arsenate failed to kill them although more than usual was used. Many had entered the ground and were out in hard-shelled beetles by July 10. Not in 20 years have so many gone into the ground as at the present time. In fields that were red with them they have gone into the ground after being sprayed three times. This looks bad for next season's early crop.

Ohio H. A. Gossard (August 20): Perillus bioculatus Fab. was received from Shelby August 1, where it was reported to be doing very effective work in destroying the Colorado potato beetle.

North Dakota R. L. Webster (August 3): Reports from county agents in northwestern counties indicate that many fields have been severely injured this year.

Nebraska M. H. Swenk (August 1): The Colorado potato beetle was more than ordinarily numerous in some parts of the potato growing district of western Nebraska, especially in Morrill County, during July.

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

- New York M. D. Leonard (June 2): Very abundant at Hudson River State Hospital Farm. Over 4,000 young plants were killed in one 5-acre field at Poughkeepsie.
- Roy Latham (July 20): Second brood were coming in large numbers on July 15 and browning potato fields in Suffolk County.
- C. R. Crosby (August 9): Potato tubers injured by the larvae have been received from Suffolk County.

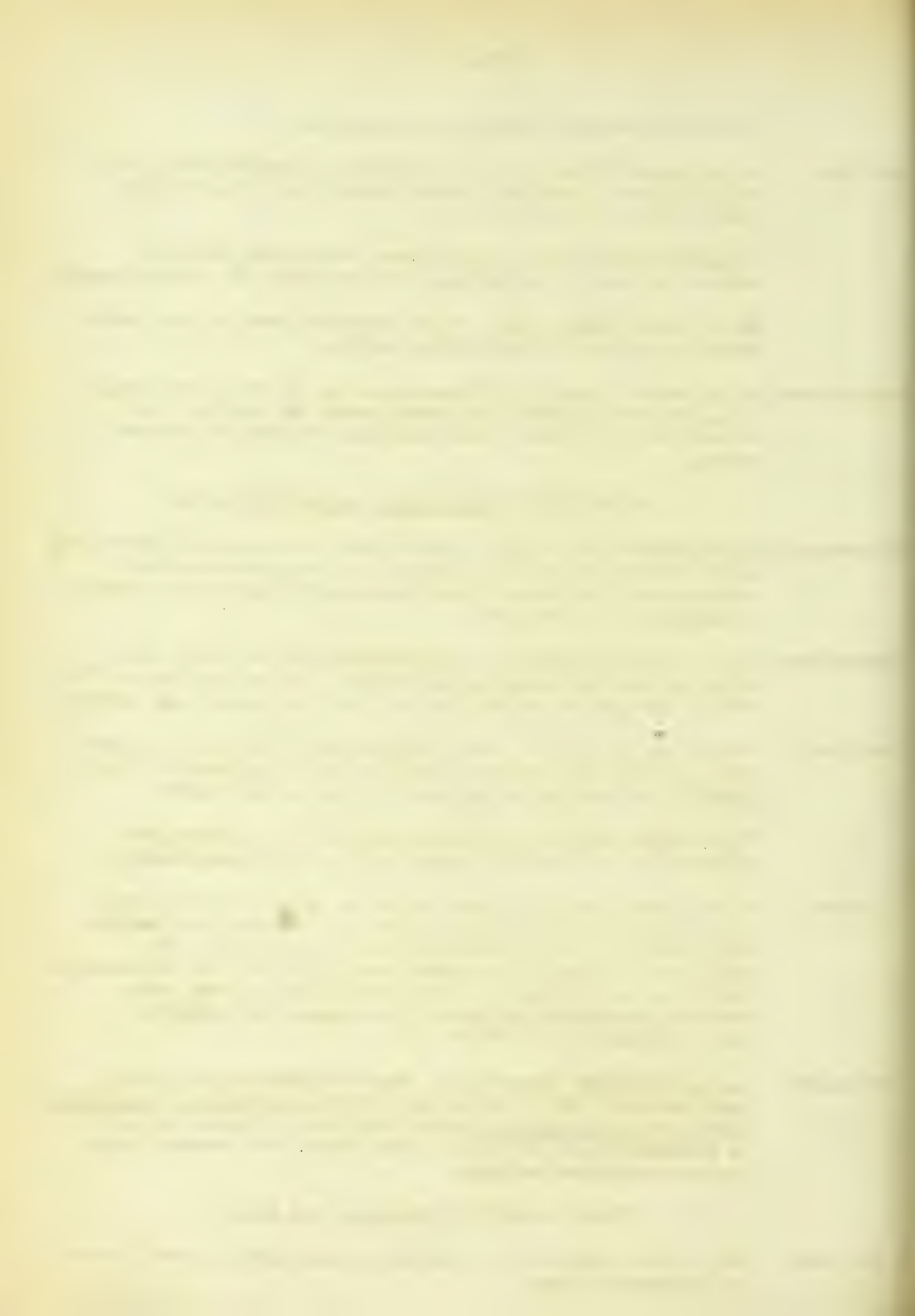
- Massachusetts A. I. Bourne (July 25): Flea-beetles on potatoes, tomatoes, etc., are causing about the usual amount of trouble, and do not seem to be much worse than usual except in isolated cases.

POTATO APHID (Macrosiphum solanifolii Ashm.)

- Massachusetts A. I. Bourne (August 23): Aphids were very generally prevalent at the Market Garden Field Station at Lexington on market garden crops, particularly on tomatoes. The particular species of aphid was not reported.
- Connecticut W. E. Britton (August 7): The potato aphid was later than usual in reaching injurious abundance. It has now (August 24) mostly disappeared at the Station Farm, Mt. Carmel, and Harden.
- New York Roy Latham (July 20): Many young tomato plants are destroyed. Potato fields were covered with this insect by July 10, but by July 20 were controlled by parasites in Suffolk County.
- W. D. Mills (August 4): Infestation has been severe, but showers have reduced the numbers of lice in Nassau County.
- Indiana H. F. Dietz (July 18): Earlier in the season tomatoes were attacked by the potato aphid. These infestations were pretty well cleaned up by the ladybird beetles, especially the convergent ladybird, the nine-spotted ladybird, and the maculate ladybird. As a result of this infestation, however, many tomatoes are showing infection with mosaic and spindling sprout disease at this time.
- Wisconsin A. A. Granovsky (August 18): Potato fields of Door County are infested with two principal aphids, Macrosiphum solanifolii Ashm. and Myzus persicae Sulz. The first, however, occupies a secondary place in number, Myzus being more common. Injury is not considered serious.

POTATO LEAFHOPPER (Empoasca mali LeB.)

- New York E. E. Paine (August 10): Injury is noticeable in some fields in Chautauqua County.



E. W. Pierce (August 4): This insect is causing hopperburn in fields that have not been sprayed in Ontario County.

Ohio T. H. Parks (August 21): This insect is now present in its usual injurious numbers in most fields of potatoes. Hopperburn is killing the tops of unsprayed plants in central and southern counties where the crop was planted in May. This is the sixth successive year for such damage.

Indiana J. J. Davis (August 22): The potato leafhopper is gradually increasing its area of destruction each year.

Illinois W. P. Flint (July 26): The potato leafhopper has been very abundant this season on potatoes, beans, and alfalfa.

Wisconsin A. A. Granovsky (August 19): Potato leafhoppers are very common, injuring potato fields by causing hopperburn. The disease appeared in the first part of August and on some early varieties of potatoes symptoms were present in the latter part of July.

Iowa F. A. Fenton (July 28): The potato leafhopper is not as serious as it has been for several years and will not very seriously affect the potato crop in the State this year, although in certain localities it has been destructive to potatoes.

TOMATO FRUITWORM (Heliothis obsoleta Fab.)

New York L. A. Zehner (August 4): Severe damage to tomatoes is reported in Onondaga County.

Indiana J. J. Davis (August 22): The tomato fruitworm has been a serious pest of tomatoes throughout the southern half of Indiana.

Illinois W. P. Flint (July 26): The corn earworm is doing some damage to tomatoes in the southern part of the State. Full-grown larvae were received as early as July 10.

IMPORTED CABBAGEWORM (Pontia rapae L.)

New York Henry Bird (August): Pontia rapae, which usually gets to the vicinity of Rye in great numbers by mid-August from Long Island and New Jersey, is conspicuous by its absence at this date.

G. E. Smith (August 4): The imported cabbageworm is very plentiful in Orleans County.

E. W. Pierce (August 11): This insect is evident in most fields and abundant in some in Ontario County.

L. J. W. Jones (August 21): This insect is exceedingly common in Rochester and extremely abundant near Victor.

CABBAGE MAGGOT (Hylemyia brassicae Bouche)

Massachusetts A. I. Bourne (July 25): The cabbage maggot in some sections of the State has apparently attained numbers considerably greater than last year. In Bristol County cabbage and cauliflower are reported as being seriously attacked. Damage already caused is estimated at about 20 to 25 per cent. Where corrosive sublimate treatment has been carried out, the damage has been cut down to a comparatively insignificant figure. Injury to radishes from this insect throughout the market garden section of the western part of the State has apparently been very serious. At least one plat was entirely spoiled by the maggot. This particular crop, not lending itself to the corrosive sublimate treatment, suffered considerable damage.

Ohio H. A. Gossard (July 25): The cabbage maggot was received from Beaverdam June 6 and from Medina June 15, on cabbage plants. We received inquiries concerning control of this insect from Bloomville June 26; Sonora June 18, where it was attacking radishes, Toledo June 12, Greenwich June 11, and Elyria June 6.

CABBAGE APHID (Brevicoryne brassicae L.)

New York G. E. Smith (August 4): Cabbage aphids are causing trouble in some fields in Orleans County.

E. W. Pierce (August 11): Few cabbage aphids have been noticed, in spite of the dry weather in Ontario County.

HARLEQUIN CABBAGE BUG (Murgantia histrionica Hahn)

Indiana J. J. Davis (August 20): The harlequin cabbage bug was abundant and destructive in gardens south of Corydon, especially injuring cauliflower.

A BUG (Peribalus limbolarius Stal).

Nebraska M. H. Swenk (August 1): This bug was reported as destroying a patch of cabbage in Dawson County during the first week in August.

ZEBRA CATERPILLAR (M. testra picta Harr.)

Ohio H. A. Gossard (July 25): The zebra caterpillar was received from Dayton July 20, attacking cauliflower, and from Wapakoneta July 29, attacking cabbage.

The first part of the paper discusses the importance of the study of the history of the United States. It is pointed out that the study of history is not only a means of understanding the past, but also a means of understanding the present and the future. The author argues that the study of history is essential for the development of a nation and for the progress of the world.

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BUFFALO TREEHOPPER (Ceresa bubalus Fab.)

Nebraska M. H. Swenk (August 1): A case of nymphs of the buffalo treehopper injuring strawberries came to notice in western Nebraska (Dawes County).

STRAWBERRY LEAF-ROLLER (Ancylis comptana Froehl.)

Ohio H. A. Gossard (July 25): The strawberry leaf-roller was received from Kipton June 26, and from Kansas July 5. From the specimens received and the reports of our correspondents the damage was evidently very severe in both these localities. An inquiry was received from Elmore June 15 regarding control of this pest.

Indiana H. F. Dietz (July 18): The strawberry leaf-roller, which last year was a very serious pest in the northern half of Indiana, is now working southward and becoming more abundant in the southern half of the State.

Nebraska M. H. Swenk (August 1): Injury by the strawberry leaf-roller was reported from Webster County.

BEANS

RED SPIDER (Tetranychus sp.)

Virginia M. H. Spencer (July 8): Red spider is exceptionally severe on Lima beans in the Eastern Shore district of Virginia and it is thought that the crop will be a total loss because of them. In the Norfolk district fields of eggplants have been severely damaged. We have had many inquiries about red spider on ornamental shrubs and several kinds of evergreens.

BROWN COLASPIS (Colaspis brunnea Fab.)

New York C. R. Crosby (July 28): This insect is doing considerable damage to a crop of field beans at Alloway.

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

Virginia Neale F. Howard (August 22): This insect is reported from Wise County.

Neale F. Howard (August 22): This insect is reported from Buncombe and Madison Counties.

Georgia J. B. Gill (August 1): The Mexican bean beetle has been observed in gardens around Thomasville, throughout the season. The adults and larvae have been very abundant on snap beans and Lima beans, upon which they caused very serious damage. Within



the past two weeks they have been observed on cowpeas growing in gardens around town. This species does not seem to attack the cowpeas when there are beans for it to feed upon.

- Ohio Neale F. Howard (August 14): The Mexican bean beetle larvae have been found at Waverly. This is in north-central Pike County, about 25 miles north of the Ohio River, in the south-central part of the State. (August 22): This beetle has been reported from Adams, Highland, Pike, and Scioto Counties.
- Indiana J. J. Davis (August 20): Scouting in the southern half of Harrison failed to reveal the presence of the Mexican bean beetle.
- Kentucky Neale F. Howard (August 22): The Mexican bean beetle has been reported from Harlan, Letcher, Cumberland, and Spencer Counties.
- Mississippi Neale F. Howard (August 22): The Mexican bean beetle has been reported from Tishomingo County.

PEAS

PEA APHID (Illinoia pisi Kalt.)

- Nebraska M. H. Swenk (August 1): During early July numbers of the pea aphid began to appear on their host plants, but were checked by natural enemies and drier weather conditions.

CUCUMBER

ONION THRIPS (Thrips tabaci L.)

- Virginia H. Spencer (July 7): Thrips tabaci L. has done considerable damage to a field planted to cucumbers and cantaloupes.

PICKLEWORM (Diaphania nitidalis Cramer)

- Missouri E. Haseman (August 2): County Agent Tolbert of Kennett, Mo., reports 50 per cent or more of the maturing cantaloupes affected; at Columbia most of the developing summer squashes are affected.

STRIPED CUCUMBER-BEETLE (Diabrotica vittata Fab.)

- Massachusetts A. I. Bourne (July 25): The striped cucumber-beetle seems to be somewhat more prevalent than it normally is throughout the State, all our records on these beetles bearing out this statement, with the exception of Bristol County, where the County Agent reports that while normally abundant they do not seem to be in any greater numbers than last year. Dusting

and spraying are very generally employed in their control, particularly in the market garden section in the eastern part of the State, and seem to be giving more or less satisfactory results. One factor which has been noted regarding them, particularly in Middlesex County, is that they apparently started later in the season than normally, and this will account for the fact that they are at present abundant in the stems and blossoms, when under usual circumstances their injury would be practically over at this period.

New York Henry Dietrich (July): The striped cucumber-beetle has been readily controlled with nicotine dust.

West Virginia W. E. Rumsey (August 15): Leaf injury occurs as usual, but the most serious loss is from larvae in roots. June 15 to July 15 they were most abundant in the roots. Some recent injury has been reported.

Ohio H. A. Gossard (August 20): Inquiries regarding control of the striped cucumber-beetle were received from many parts of the State.

TWELVE-SPOTTED CUCUMBER-BEETLE (*Diabrotica 12-punctata* L.)

Delaware J. F. Adams (July 1): The 12-spotted cucumber-beetle is very abundant and causing considerable injury in Sussex County.

Ohio H. A. Gossard (July 25): The 12-spotted cucumber beetle was received from Lorain June 13, where it was attacking muskmelons.

New Mexico R. Middlebrook (July 23): Throughout this entire State this insect is attacking all crops, abundance as compared with an average year being about the same.

MELONS

A GROUND-BEETLE (*Harpalus* (or very close to this genus)
det. Adam Boving

Mississippi R. W. Harned (July 20): George Houston, Satallo, Miss., reports these insects seriously injuring his watermelons: "I planted my 7-acre late watermelon patch on the 20th of June, and got a perfect stand, but now on the 14th of July they are killed by these worms. They work just under the ground. You can see their work on roots of these melons. These worms are the most destructive things that have ever been on watermelons."

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MELON APHID (Aphis gossypii Glov.)

- Ohio H. A. Gossard (July 25): The melon aphid was received from West Liberty on cucumber July 12. Other inquiries evidently referring to this species came from Chardon and from Columbus. (August 20): Aphis gossypii came from Geneva August 6 on muskmelons.
- Indiana J. J. Davis (August 22): This insect has been a pest throughout the melon season. In some sections large acreages were plowed up before harvest on account of it.
- Nebraska M. H. Swenk (August 1): For the first time in several seasons there has been very little injury during July by the melon aphid. These pests began to increase early in the month but were brought under almost complete control by the parasite Aphidius testaceipes, assisted by the ladybird beetle Rhipidamia convergens.
- New Mexico R. Middlebrook (July 20): The melon aphid is reported from Messilla Valley as attacking melons. Growers are now spraying, so they will get no chance. Abundance is greater as compared with an average year, and also last month.

SQUASH

SQUASH BUG (Anasa tristis DeG.)

- Massachusetts A. I. Bourne (July 25): The common squash bug is apparently normally abundant generally throughout the State.
- New York A. M. Hollister (July): Squash bugs have been abundant and caused considerable damage.
- K. E. Paine (August 4): Squash bugs are numerous and destructive in Chautauqua County.
- Ohio H. A. Gossard (July 25): The squash bug was found to be very numerous and destructive among melons and cucumbers at Canton July 12. It was received from Dalton July 5, and from Middletown July 17, where it was reported to be attacking cucumbers. (August 20): We had inquiries for the control of Anasa tristis from Mansfield July 24, and from Lodi August 11, and have also had a number of local phone calls during the last week or two regarding the same insect.
- Nebraska M. H. Swenk (August 1): The squash bug was more than ordinarily injurious to squashes and pumpkins during the entire month of July in Nebraska.

SQUASH-VINE BORER (Melittia satyriniformis Huebn.)

Massachusetts A. I. Bourne (August 23): The squash-vine borer larvae have been observed to be beginning to leave the plants and enter the ground. Infestation throughout the State seems to be rather uneven in its extent, In this immediate region it is not quite up to normal, and a report from the Market Garden Field Station at Lexington states that up to the middle of the month little or no evidence of damage had been noted.

Iowa F. A. Fenton (July 28): The squash-vine borer is more destructive to squash and pumpkin vines this year than for several seasons. The second generation is actively at work at the present time.

ONION

ONION THRIPS (Thrips tabaci L.)

New York Roy Latham (August 18): The onion thrips has been reported from Orient, attacking cauliflowers and Brussels sprouts. Abundance as compared with an average year seems to be much greater.

F. H. Bond (August 4): The onion thrips has been reported from Oswego County; nowhere serious.

Indiana J. J. Davis (August 22): The onion thrips has been an onion pest of considerable importance in several sections in northern Indiana.

Michigan Eugenia McDaniel (August 18): The onion thrips, has been reported from a Michigan onion field, where a good percentage of the crop has been destroyed, at Charlotte, Mich.

ONION MAGGOT (Hylemyia antiqua Meig.)

New York M. D. Leonard (June 2): A little damage is being done to young seedlings at Hudson River State Hospital farm at Poughkeepsie.

Ohio H. A. Gossard (July 25): An inquiry was received from Celina June 16 for recommendations to control the onion maggot,

RHUBARB

RHUBARB CURCULIO (Lixus concavus Say)

Ohio H. A. Gossard (July 25): The rhubarb curculio was received from Kent June 18. Several specimens were brought to my office

from nearby points about Wooster and as far distant as Canton, the complaint being that they were attacking rhubarbs. In every case it was learned that dock plants were abundant in the neighborhoods where the rhubarb grew.

HORSERADISH

HORSERADISH FLEA-BEETLE (Phyllotreta armoraciae Koch.)

New York

C. R. Crosby (July 28): The horseradish flea-beetle is seriously injuring a field of horseradish in Elmira.

TURNIP

TURNIP APHID (Rhopalosiphum pseudobrassicae Davis)

Connecticut

E. M. Ives (July 24): This aphid has been reported from Meriden, where it was attacking winter turnips.

W. E. Britton (August 24): The turnip aphid has been reported from New Haven, and Hamden, attacking turnips and kale.

Nebraska

M. H. Swenk (August 1): During early July numbers of the turnip aphids began to appear on their host plants, but were checked by natural enemies and drier weather conditions.

GREEN PEACH APHID (Myzus persicae Sulz.)

Ohio

H. A. Gossard (August 20): The green peach aphid was received from Shreve August 17 on turnip.

BEAN APHID (Aphis rumicis L.)

New York

M. D. Leonard (August 21): A patch of 20 rows each 120 feet long was partly cleaned up by this aphid.

CARROT BEETLE (Ligyrus gibbosus DeG.)

West Virginia

W. E. Rumsey (August 21): Specimens of adults have been unusually abundant for the past month. Usually they are rare at this place.

SWEET POTATO

SWEET-POTATO WEEVIL (Cylas formicarius Fab.)

Oklahoma

E. E. Scholl (June 6): Larvae of the sweet-potato weevil are present at Comanche, in Stephens County, Okla., These probably originated from slips grown at Harlingen, Texas.



S O U T H E R N . F I E L D - C R O P I N S E C T S

COTTON

COTTON BOLL WEEVIL (Anthonomus grandis Boh.)

- North Carolina B. R. Coad (August 16): Reports have been received from 6 points in the State, one report from Cumberland County indicating that great damage is expected. Other reports merely indicate presence of the pest.
- South Carolina B. R. Coad (August 16): Reports have been received from 16 localities in this State. Six record heavy infestations, with serious damage. The remaining localities merely indicate that the pest is present.
- Georgia B. R. Coad (August 16): Reports have been received from 22 localities. Fifteen report heavy damage by weevils puncturing the bolls.
- Florida B. R. Coad (August 16): A single report indicates the presence of this insect in Madison County.
- Alabama B. R. Coad (August 16): Reports were received from 30 localities. Thirteen of these localities, generally distributed over the State, indicate heavy damage by this pest. The remaining localities indicate slight damage or the mere presence of the pest.
- Mississippi B. R. Coad (August 16): Reports have been received from 77 points in the State. Twenty-four report heavy infestation with serious damage. At the remaining points damage is slight.
- Louisiana B. R. Coad (August 16): Reports have been received from 6 localities. Three report heavy damage, weevils puncturing the bolls.
- Tennessee B. R. Coad (August 16): Reports have been received from 20 localities. Three report serious damage. At the remaining localities damage is slight.
- Arkansas B. R. Coad (August 16): Reports have been received from 37 localities. Five report damaging infestations, the remaining localities report slight damage.
- Oklahoma B. R. Coad (August 16): Reports have been received from 4 localities, with heavy damage at one point.
- Texas B. R. Coad (August 16): Reports have been received from 8 localities, with serious damage at 2 points.

COTTON LEAFWORM (Alabama argillacea Hubn.)

- South Carolina B. A. Berly (August 26): An outbreak of this insect occurred in Oconee County about August 15, requiring control measures owing to the lateness of the cotton crop.

- Georgia B. R. Coad (August 17): Leafworm was reported under date of August 14 as damaging crops in Floyd County.
- Alabama W. E. Hinds (August 23): Cotton worm has been reported from fully three-fourths of the counties of the State. Stripping has been unusually widespread for the first brood of worms. Strenuous fights have been made against this brood and much poisoning will be done for the next generation.
- Mississippi R. W. Harned (August 11): Cotton leafworm occurs in practically every county of the State where cotton is grown. Considerable damage is being done in some sections.
- Louisiana T. H. Jones (August 8): Cotton leafworm is causing considerable defoliation of cotton throughout the State. In many sections heavy control measures are being practiced.
- Tennessee G. M. Bentley (August 20): Very phenomenal outbreak of this insect is reported in 24 counties of this State. Every available force is being directed to help farmers to get material and implements for fighting the pest. We have been successful in getting four lots of 25,000 pounds of calcium-arsenate located in the State. Leafworm is very serious, as cotton is fully 10 days or two weeks late and the leafworm about three weeks earlier than usual.
- Missouri L. Haseman (August 17): Cotton leafworm is reported working on cotton in southern Missouri.
- Arkansas B. R. Coad (August 17): Cotton worm is generally distributed over all parts of the State where cotton is grown, damaging crops seriously in several counties.
- Texas M. C. Tanquary (July 23): There was a serious outbreak of the cotton leafworm in the Lower Rio Grande Valley during the first three weeks of July.
- F. C. Bishopp (July 27): Cotton leafworm appeared in destructive numbers in certain fields in the vicinity of Dallas about June 23. At that time they were numerous enough to defoliate a considerable acreage. At present there has been very little spread of the species and damage thus far does not amount to much.

COTTON BOLLWORM (Heliothis obsoleta Fab.)

- Georgia W. F. Turner (August 19): This insect has been doing more damage than the boll weevil in some of the northern Georgia counties.
- Alabama B. R. Coad: Heavy bollworm damage is reported in the vicinity of Clayton.
- Texas B. R. Coad: Bollworm is reported from Waco, Gonzales, Temple, and Runge.



COTTON RED SPIDER (Tetranychus telarius L.)

- Georgia W. F. Turner (August 19): This species is seriously affecting cotton at Royston.
- Missouri L. Haseman (August 2): Serious infestations of patches of cotton are reported from Mississippi County.

COTTON APHID (Aphis gossypii Glov.)

- South Carolina B. R. Coad: This pest is reported as present at Chester.
- Georgia J. B. Gill (August 3): The cotton aphid appeared in injurious numbers in cotton fields in some sections of southern Georgia in Mitchell County.
- W. F. Turner (August 19): The cotton aphid is serious in Franklin and Floyd Counties. It is most serious in dusted fields but is doing much damage in fields treated with the sirup mixture and in some untreated fields.
- New Mexico W. E. Emery (August 1): The cotton aphid is just commencing to work in the tops of the cotton plants in Dona Ana County.

TOBACCO

TOBACCO FLEA-BEETLE (Epitrix parvula Fab.)

- Florida F. S. Chamberlin (August 6): One late crop of tobacco in Quincy County is badly damaged by this insect.

F O R E S T A N D S H A D E - T R E E I N S E C T S

MISCELLANEOUS FEEDERS

PERIODICAL CICADA (Tibicen septendecim L.)

BROOD XIV (SEVENTEEN-YEAR RACE)

- Massachusetts A. I. Bourne (July 25): A report from Mr. Hoxie of Hyannis states that on the north side of the Cape they were particularly numerous, especially the last part of June and the early part of July, but as far as the injury to trees of economic value was concerned, the damage was very slight indeed.
- Ohio H. A. Gossard (July 25): The brood of the 17-year locust appeared perhaps a little later than the average season and continued until early July. From the large number of reports now in my hands I judge that the brood was more numerous than in 1906 and that considerably more damage was done to young orchards and to forest trees. Many young orchards were reported to us "Threatened or ruined." While I have not had time to check up fully on the infested territory, I think they appeared in considerable numbers in neighborhoods where they were comparatively sparse 17 years ago.

Indiana J. J. Davis (August 20): Observed injury to oaks and hickories north of Corydon to Corydon Junction, the injury being especially common near Corydon Junction. N. I. Clunie, the County Agricultural Agent, writes that the cicadas were abundant in the north-central part of Harrison County and also in the southeastern part, mentioning especially the vicinity of Laconia. He reports some damage to young orchards.

GIPSY MOTH (Porthetria dispar L.)

Massachusetts A. I. Bourne (July 25): In northern Worcester County, Mr. Calkins reports the gipsy moth as very scarce and as doing less damage than the apple tent caterpillar. Mr. Hoxie of East Sandwich, which is on the Cape, reports that caterpillars do not appear to be anywhere nearly as numerous as last year. Mr. Farrar, of Middlesex County, has found but one gipsy moth caterpillar in his orchard this season. It is very evident therefore that both the gipsy moth and the brown-tail moth are proving considerably less abundant than is normally the case.

BROWN-TAIL MOTH (Euproctis chrysorrhoea L.)

Massachusetts A. I. Bourne (July 25): Mr. Fiske of Lunenburg states that in his orchard the damage was practically nil and the brown-tails were virtually extinct. The same condition prevails in northern Worcester County, where this season Mr. Calkins, reports practically no brown-tails seen this year. Mr. Farrar, of Middlesex County, reports seeing no brown-tail caterpillars or moths this year. They were noted, however, in considerable abundance in the region of Woods Hole, down at the heel of the Cape.

ELM SPANWORM (Ennomos subsignarius Huebn.)

New York R. E. Horsey: The snow-white linden moth is very common near lights July 9, a few still to be found July 13, none last year but a swarm on June 27, 1921, at Rochester.

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma S. & A.)

New York V. E. Peterson (July): Spraying for the caterpillar of the tussock moth, which has infested the trees of Buffalo in great numbers, has just been finished. Conditions have been worse this year than for some years previous.

R. E. Horsey (July 17): The white-marked tussock moth was reported very scarce at Rochester, but two horse chestnut trees were found stripped of foliage, perhaps more this year than in 1922, as none were reported last year.

Ohio H. A. Gossard (August 20): The white-marked tussock caterpillar was received August 8, from Geneva on grape and on August 17 from Columbus on plum and elm. This insect has been observed to be numerous in several Ohio localities. It is more plentiful than it has been for some years.



BAGWORM (Thyridopteryx ephemeraeformis Haw.)

- New York Henry Bird (August): The serious drought which has prevailed for months has apparently caused insect life to be less abundant than is usual at this time of year. The bagworm, although it occurs scatteringly in somewhat greater numbers than usual at Rye, has not been really abundant. Parasites seem to have held it in check.
- C. R. Crosby (August 6): Trees are badly infested at Oyster Bay.
- M. D. Leonard (August 8): It is reported that the whole hilltop around the Richmond Country Club grounds is infested. Just what trees are infested was not learned. The Dougan Hills Improvement Society has requested the cooperation of this office in a control campaign next season.
- Pennsylvania T. L. Guyton (August 7): This insect seems very general in the eastern part of this State.
- West Virginia W. E. Rumsey (August 16): Numerous reports from various parts of the State indicate an unusual abundance of this insect.
- Georgia O. I. Snapp (August 17): Bagworms were very numerous and doing considerable damage to cotton in a field at Shellman, Ga.
- Ohio H. A. Gossard (July 25): The common bagworm or basketworm was received from many points in Ohio.
- T. H. Parks (August 13): Unusual summer reports have been received of the presence of this insect in central and southern counties. Trees attacked are mostly evergreens, including arborvitae, but it is also present on fruit trees.
- E. W. Mendenhall (August 8): The bagworm is doing great damage to trees, especially evergreen trees and shrubbery, in the vicinity of Cincinnati, Ohio.
- Indiana J. J. Davis (August 22): Numerous reports have come from Terre Haute south to the Ohio River, i.e., a little more than the southern third of Indiana. The species occurs principally on arborvitae and other conifers, but some injury is done to deciduous shade trees.
- Missouri L. Haseman: Numerous complaints continue to come in about the bagworms, especially on evergreens.
- Texas F. C. Bishopp (August 25): Bagworms have been very abundant on arborvitae and cedars in certain sections of Dallas County. Some trees have been completely defoliated by the pest.

ARBORVITAE

ARBORVITAE LEAF-MINER (Argyresthia thuiella Pack.)

New York

R. E. Horsey (July 17): Two larvae and one chrysalis of the arborvitae leaf-miner have been found after examination of 35 infested twigs July 2. Little damage is noted except to one tree in Rochester.

BIRCH

BIRCH LEAF-SKELETONIZER (Bucculatrix canadensisella Thimb.)

New York

R. E. Horsey (July 17): The birch leaf-skeletonizer is common on red birch and I suppose elsewhere.

CATALPA

CATALPA SPHINX (Ceratomia catalpae Boisd.)

Ohio

E. W. Mendenhall (August 17): The catalpa sphinx is doing great damage in southwestern Ohio in nurseries and forests. Some spraying and dusting is being done.

ELM

ELM LEAF-MINER (Kaliopfenusa ulmi Sund.)

New York

R. E. Horsey (July 17): The elm leaf-miner is rather more common than usual. Some small trees with their leaves badly disfigured are to be found in Highland Park.

EUROPEAN ELM SCALE (Gossyparia spuria Modeer)

New York

R. E. Horsey (July 17): The elm bark-louse was sprayed on July 6 and 12 while moving. Very little occurs in Highland Park and on streets, but a new infestation has been found in street trees in a nearby section of the city.

New Jersey

R. B. Lott (August 21): This scale has been noted as very plentiful on a row of elms at Bound Brook.

Ohio

H. A. Gossard (July 25): This insect was received from Covington, Columbus, Dayton, Akron, Salem, and Tiffin.

FLATHEADED BORERS :

Texas

F. C. Bishopp (August 25): Borers which have been determined by R. A. St. George as Chrysobothris sp. have been unusually abundant under the bark of this year's planting of sycamore and elm trees on the streets of Dallas. Practically 100 per cent of the trees are infested. Often the number of borers in one of these small trees may run as high as 15. The oriental sycamores which are now being tried as shade trees in this section are infested equally

as badly as the native. If it were not for the continual worming of the trees by the city forestry department these borers would bring about the destruction of practically all trees set last spring. A goodly number of borers were also present in two and three-year-old trees, but they seem better able to withstand the attack.

ELM LEAF-BEETLE (Galerucella luteola Muell.)

- Massachusetts A. I. Bourne (July 25): One or two cases of infestation of the elm leaf-beetle on elms immediately around Amherst have been observed within the last week. The larvae are practically mature at this time. This is about the first instance of the presence of the beetle in Amherst for a period of about eight or nine years. No reports of serious infestation throughout the State have been brought to our attention, however. The pest is apparently beginning gradually to "come back" after a lapse of several years.
- Connecticut Philip Garman (August 23): These beetles are severely damaging trees in Fairfield County, being more abundant than last year.
- New York R. E. Horsey (August): A very bad infestation was found in Rochester. The leaves were badly skeletonized and a large number of grubs were at the base of the trees, while a number were still feeding. The first of the month we sprayed about 30 trees here. This insect is slowly spreading but where spraying is thoroughly done can be kept under control. The greatest problem is traffic and the objection of people to having their houses spotted by the spray material.

ELM BORER (Saperda tridentata Oliv.)

- Nebraska M. H. Swenk (August 1): Elm trees were reported injured by the elm borer.

ELM APHID (Myzocallis ulmifolii Monell)

- Texas F. C. Bishopp (August 25): Some American elms on the streets of Dallas were found to be heavily infested with aphids which were determined by Miss Miriam A. Palmer of the Colorado Experiment Station as M. ulmifolii. The leaves were considerably discolored and spraying with heavy oil emulsions was carried out.

HICKORY

HICKORY BARK-BEETLE (Scolytus quadrispinosus Say)

- New York Henry Bird (August): This insect, which in former years badly infested more than 75 per cent of all hickory trees in this section and more than 95 per cent of all of the old trees, is apparently at a very low ebb this season.

LOCUST

LOCUST LEAF-MINER (Chalepus dorsalis Thumb.)

- New Jersey R. B. Lott (July 23): Considerable damage occurs on locusts in the neighborhood of Mendham, Morris County.
- Ohio E. Mendenhall (August 8): This insect is reported as very bad throughout southern Ohio and doing considerable damage.
- Indiana J. J. Davis (August 20): The locust leaf-miner is exceedingly abundant in Harrison County on the locust. Trees along roadsides and on hillsides are completely browned from the work of this insect.

MAPLE

WOOLLY MAPLE-LEAF SCALE (Phenacoccus acericola King)

- New York R. E. Horsey (July 17): This species is reported as less than usual. Trees were sprayed July 6 or 7 at Rochester.
- Ohio H. A. Gossard (August 20): This insect was received from Lima on August 6 on maple.

SMALL RED HORNED BORER (Ptilinus ruficornis Say)

- New York C. R. Crosby (July 11): This species is reported from Clay as injuring soft maple timbers in barn.

COTTON RED SPIDER (Tetranychus telarius L.)

- New York M. D. Leonard (August 21): About 50 young trees on the plaza have foliage badly infested at Albany.

OAK

WHITE-BLOTCH OAK LEAF-MINER (Lithocolletes hamadryella Clem.)

- New York R. E. Horsey (July 17): This insect is very common and noticeable on small oaks below barns in Highland Park, more than usual.
- Ohio E. Mendenhall (August 8): This insect is quite bad in Hamilton County and doing considerable damage in the forest as well as in the nursery.
- H. A. Gossard (August 29): This insect was received from Tiffin on August 7 mining out oak leaves.

PINE

WHITE PINE WEEVIL (Pissodes strobi Peck)

- New York F. J. Whaley (August 20): City Forester Whaley reports 4000 to 5000 young trees in forest plantations badly infested, about 5 per cent.



New Jersey R. B. Lott (July): Considerable damage has been reported on an estate at Boonton, Morris County. Almost all Pinus strobus had been attacked on the estate.

POPLAR

VAGABOND GALL-LOUSE (Pemphigus vagabundus Walsh)

Nebraska M. H. Swenk (August 1): Complaints of deformity by the vagabond gall-louse on the cottonwood continued to be received during early August. (August 1): In western Nebraska reports of injury to cottonwood trees by the vagabond gall-louse were received.

OYSTERSHELL SCALE (Lepidosaphes ulmi L.)

Indiana H. F. Dietz (July 18): The light-brown form of oyster-shell scale began laying eggs on July 6. The second brood should appear within the next two weeks. The gray-brown form is in the early third instar at the present time. We have no data on the apple form, which is not serious in this State. In this connection it should be pointed out that the nomenclature for the three different forms of oyster-shell scale, published by Glenn in the Journal of Economic Entomology for April, 1921, should be followed, i. e., the light-brown form, which is two-brooded and which lives on Carolina poplar but cannot maintain itself on apple; the apple form, which is likewise two-brooded and lives on apple but cannot live on Carolina poplar; and the gray-brown form, which is single-brooded but cannot maintain itself on apple, at least in this State.

PALE TUSSOCK MOTH (Haliadota tessellaris S. & A.)

New York R. E. Horsey (August): This insect has given us more trouble than any other pest this month. It is found in all parts of the city wherever the plane tree is planted, as well as in Highland Park. On several streets planted to plane trees the trees were sprayed and we are still at it. In fact, this insect has done fully as much damage to plane trees as the elm leaf-beetle did to elms.

COTTONWOOD LEAF-BEETLE (Lina scripta Fab.)

New Jersey R. B. Lott (August 19): Near New Brunswick this insect is very plentiful on willow and poplar, especially the latter.

Nebraska M. H. Swenk (August 1): In western Nebraska reports of injury to cottonwood trees by the cottonwood leaf-beetle were received. (August 1): Injury to the cottonwood trees in the City Park at Callaway, Custer County, by the cottonwood leaf-beetle was complained of during early August.

SPRUCE

SPRUCE BUDWORM (Cacoecia fumiferana Clem.)

Idaho J. C. Evendon (July 24): We are positive the spruce budworm is in epidemic form in Bonner, Valley, and Adams Counties. No doubt there are many other regions suffering from the effects of this insect.

SPRUCE CONEWORM (Dioryctria reniculella D. & S.)

Michigan R. H. Pettit (August 13): This insect destroyed new leaders of many young spruce.

TULIP

TULIP SCALE (Toumeyella liriodendri Gmel.)

West Virginia W. E. Rumsey (August 16): While commonly present on the tulips, the tulip scale is not usually so abundant or injurious as is the case this year.

Ohio H. A. Gossard (August 20): This insect was reported from Ironton July 30 attacking tulip tree.

Indiana J. J. Davis (August 22): The tulip tree scale is a common and conspicuous scale in the southern part of the State.

TULIP SPOT-GALL (Thecodiplosis liriodendri O. S.)

New York M. D. Leonard (August 17): A large shade tree on the Major Phillips estate is badly infested at Claverach.

WILLOW

WILLOW CURCULIO (Cryptorhynchus lapathi L.)

Maine E. M. Patch (July 30): The willow curculio has been reported from Eastport attacking willow trees.

SMALL WILLOW FLEA-BEETLE (Chalcoides helxines L.)

North Dakota R. L. Webster (August 3): Willow trees in a nursery row are much injured by these beetles.

BOXELDER

BOXELDER BUG (Leptocoris trivittatus Say)

Texas F. C. Bishopp (August 25): A heavy infestation of this bug was found about the residences in Dallas on August 20. Most of the bugs were adults, but nymphs of various sizes were present. They seem to be feeding largely upon China berries and were causing considerable trouble by entering houses.



INSECTS ATTACKING GREENHOUSE

AND ORNAMENTAL PLANTS

MISCELLANEOUS FEEDERS

GREENHOUSE SOWBUG (Porcellio pathkei Brandt)

Ohio H. A. Gossard (August 20): The greenhouse sowbug was received from Antwerp August 10, where it was said to be severely attacking greenhouse plants.

COMMON RED SPIDER (Tetranychus telarius L.)

Indiana H. F. Dietz (July 13): Red spider is becoming a very serious pest on gladiolus, various kinds of beans, and various ornamental shrubs,

Texas F. C. Bishopp (July 27): The common red spider became very abundant on various types of vegetation during the latter part of June and increased in numbers through July. Late string beans were damaged considerably by it. It was also abundant on ornamental vines and violets.

A GALL MITE (Eriophyes eucricotes Nalepa)

New York M. D. Leonard (July 18): This mite is causing galls on leaves of matrimony vine on the Cornell University Campus. Specimens were collected by Stewart H. Burmham, Associate Curator, Department of Botany, Cornell.

NEGRO BUG (Corimelaena pulicaria Germ.)

Nebraska M. H. Swenk (August 1): In flower gardens the negro bug was quite injurious to cosmos, calliopsis, and other related flowers in Lancaster and Gage Counties.

A SPITTLE INSECT (Philaenus lencophthalmus L.)

New York A. L. Pierstorff (August 11): This species is common on practically all young trees and shrubs in a nursery at Honeoye Falls.

COLUMBINE

A CURCULIO (Conotrachelus anaglypticus Say)

Ohio H. A. Gossard (August 20): This insect was received from Seville August 7, where the larvae were reported to be destructive to the stems and roots of cultivated columbine.

DAHLIA

A SCARABAEID BEETLE (Serica parallela Casey)

New York C. R. Crosby (July 23): At New Rochelle this insect was seriously injuring dahlias in gardens.



M. D. Leonard (August 13): This insect is injuring dahlias, aster, callendulas, young chrysanthemums, and lettuce. The beetles were reported impossible to poison, feeding mostly at night and dropping to the ground upon being disturbed. On August 22, it was not so serious as formerly.

COTTON LEAF-BUG (Adelphocoris rapidus Say)

Cio H. A. Gossard (August 20): This insect was received from Plymouth August 11, where it was said to be inflicting severe damage upon the buds of dahlia.

CORN-SILK BEETLE (Luperodes varicornis Lec.)

Mississippi R. W. Harned (July 3): Mrs. R. P. Nickels of Steens, Miss., sent specimens of L. varicornis to this office and stated on June 11 as follows: "They are literally destroying my dahlia blooms. I am sending you the dahlias, showing the effect of their being on them just a few hours. They damage roses in the same way." On June 29, she sent more specimens and wrote as follows: "I am sending you more of these bugs that have destroyed every rose and dahlia in my yard, and are now ruining cannas and zinnias. They are everywhere and even come through screens." Complaints were also received from McAdams, Miss., in regard to the same insects attacking flowers.

STALK BORER (Papaipema sp.)

eneral C. A. Weigel (July 12): This insect was reported attacking dahlias and foliage plants at Bridgeport, Conn., New York, Baltimore, and Detroit.

TARNISHED PLANT-BUG (Lygus pratensis L.)

ermont C. A. Weigel (July 20): A letter was received from Northfield with a report that this insect was damaging dahlias. (July 21): It is damaging dahlias at Riverton.

A LEAF-BEETLE (Nodonata tristis Oliv.)

Virginia C. A. Weigel (August 18): This insect is reported attacking dahlias at Richmond.

WHEAT THRIPS (Euthrips tritici Fitch and tabaci L.)

Indiana H. F. Dietz (July 18): The wheat and onion thrips have been unusually serious on gladiolus grown without artificial watering this year.

IRIS

STALK BORER (Papaipema sp.)

Pennsylvania C. A. Weigel (July 23): This insect was reported attacking fleur-de-lis at West Philadelphia.

AN APHID (Aphis iridis DeG.)

California E. O. Essig (August 17): This aphid has been imported from Europe and Asia Minor on Iris spp. and is a pest on the roots and crowns of nearly all varieties of cultivated and wild iris in the gardens. It has been herefor many years, but I have not noticed a report of it.

IRIS BORER (Macronoctua onusta Grote)

New York M. D. Leonard (August 2): Full-grown larvae were received with the report that they were doing considerable damage to a number of iris plants by boring through the stems, at Troy.

Ohio H. A. Gossard (August 20): A letter from Cincinnati reported the iris borer to be destructive to cultivated iris.

Indiana H. F. Dietz (July 18): The iris root-borer is a serious pest all over the State wherever iris is grown in ornamental plantings. It is invariably associated with the iris root rot caused by Bacillus carotovorus, which completes the destruction begun by the borer. Neither the insect nor the disease has been found alone, and the borer evidently carries the bacteria in its intestinal track.

J. J. Davis (August 22): The iris borer has been unusually prevalent and destructive in Indiana this year.

LILAC

LILAC BORER (Podosesia syringae Harris)

New Jersey R. B. Lott (August 10): This borer has been noticed throughout this State attacking lilacs.

LAPPET MOTH (Tolyte velleda Comst.)

Ohio H. A. Gossard (August 20): Tolyte velleda were received from Massillon July 30 on quince and from Cincinnati August 11 on lilac.

Ips quadriguttatus Fab."

New York R. E. Horsey (July 17): We found these beetles in borer holes or under the bark of lilacs July 18.

TIGER SWALLOWTAIL (Papilio glaucus v. turnus L.)

Ohio H. A. Gossard (July 25): This species was received from Hiram July 9, attacking lilac.

ROSE

ROSE CURCULIO (Rhynchites bicolor Fab.)

Indiana H. F. Dietz (July 18): This curculio is reported as doing serious damage to the buds of Rosa rugosa at Speedway City June 26.

ROSE SAWFLY (Caliroa aethions Fab.)

New York P. M. Eastman (August 2): One large rambler rose bush is badly infested by the slugs.

Ohio H. A. Gossard (July 25): Letters quite evidently referring to the rose slug were received from Toledo, Geneva, and Cleveland.

HOLLYHOCK

A STALK BORER (Papaipema cataphracta Grote)

New York C. R. Crosby (July 30): This insect was reported from Gasport destroying many plants.

NYMPHETAE ODORATA

WATER LILY APHID (Rhopalosiphum nymphaeae L.)

Massachusetts E. P. Felt (August 16): Large patches of water lilies are heavily infested, in some cases blossoms badly disfigured, at Northboro.

WISTERIA

GIANT SKIPPER (Epargyreus tityrus Fab.)

Ohio H. A. Gossard (August 20): This insect was received from Akron August 13, where it was attacking wisteria.

PIPEVINE

PIPEVINE SWALLOWTAIL CATERPILLAR (Papilio philenor L.)

Ohio H. A. Gossard (August 20): An inquiry from Cleveland asked for control measures for the pipevine swallowtail caterpillars, which were said to be inflicting severe injury on pipevine.



ZINNIAS

STALK BORER (Papaipema sp.)

- New York C. A. Weigel (July 29): A letter was received from New York with the report that this insect was attacking flower gardens, chiefly zinnias.
- Maryland C. A. Weigel (July 7): A letter was received from Havre de Grace, Md., where this insect was reported attacking zinnias.

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Comst.)

- New York R. E. Horsey (July 17): Apparently our radical treatment, spring of 1922, of the evergreen Euonymus radicans vegeta, has destroyed the Euonymus scale; we cut the plants to a few inches of the ground and sprayed with scalecide.
- New Jersey R. B. Lott (August 23): This scale has been noted on a large planting at Red Bank, Monmouth County.

I N S E C T S A F F E C T I N G M A N A N D D O M E S T I C

A N I M A L S

MAN

HOUSE FLIES (Musca domestica L.)

- Connecticut F. C. Bishopp (June 23): House flies were observed to be fairly numerous in these localities and were causing annoyance by entering residences, restaurants, etc.

MOSQUITOES (Culicidae)

- Connecticut John H. Fay (July 30): Mosquitoes are less abundant in northern Middlesex County than last year.
- New York L. J. W. Jones (August 21): Mosquitoes are not numerous this season on the east side of Rochester.
- Florida F. S. Chamberlin (August 6): This pest is very numerous owing to continued wet weather.
- Texas F. C. Bishopp (July 26): Yellow-fever mosquitoes are becoming fairly numerous in this vicinity (Dallas), and dengue fever is again manifesting itself in Texas. At least five cases have been reported to the Health Department of Dallas, the first occurring about the middle of July. A number of cases have been reported from Denton.

CHIGGERS (Trombicula tlalzahuatl Murray)

- Indiana J. J. Davis (August 22): Chiggers have been as abundant as usual or probably more so.
- Texas F. C. Bishopp (July 25): There has been a marked decrease in the abundance of chiggers during the past few weeks, probably due to high temperatures and lack of rainfall. (August 25): Chiggers appear to be increasing somewhat in number since the recent showers. This is probably due to the mites coming up out of their hiding places and thus becoming more easily picked up.

CATTLE

SCREWORM (Chrysomya macellaria Fab.)

- New York F. C. Bishopp (June 28): On June 28, a number of adults of this species were observed in traps and about refuse at an abattoir. This is the first appearance of this species in the vicinity.
- Texas D. C. Farman (July 21): Cases of worms were quite numerous in sheep the first of the month (10 per cent), cattle showing about 2 per cent. The adults have at no time during the month been very abundant. At the end of the month one is rarely observed and cases are much fewer.
- F. C. Bishopp and E. W. Laake (July 24): Flies about packing houses have been greatly decreased in numbers and are causing very little annoyance. Chrysomya macellaria predominates, with house flies second in number and a few Lucilias. Apparently Phormia resina and Calliphora spp. have disappeared.

HORN FLY (Haematobia irritans L.)

- New Hampshire F. C. Bishopp (June 25): Beef cattle on pasture here were observed to be seriously annoyed by horn flies. The average number per animal was about 600, the maximum about 1,000.
- New York F. C. Bishopp (June 28): Horn flies are causing considerable annoyance to dairy cattle in this vicinity. Some animals have approximately 1,000 flies upon them, and the average will no doubt run 300.
- Texas F. C. Bishopp (August 25): Horn flies are relatively scarce at this time. They have not caused serious annoyance to stock since the beginning of the hot dry weather about the first of July.
- Ohio F. C. Bishopp (July 1): Livestock of all classes are being annoyed to a considerable extent by stable flies, though their number is probably not greatly in excess of the normal.
- Indiana
- Missouri
- and
- Oklahoma

The first part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results achieved. The report concludes with a summary of the work done and a list of the names of the persons who have contributed to it.

The second part of the report contains a list of the names of the persons who have contributed to the work during the year. It is arranged in alphabetical order and includes the names of all the persons who have contributed to the work in any way.

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Nebraska

M. H. Swenk (August 1): The pest of stable flies mentioned in the July report continues. During the entire month of July there has been an almost unprecedented abundance of the stable fly. The trouble is State-wide, reports of great annoyance to live stock by these flies having been received from 31 different counties, representing all parts of the State. Serious losses from a shortened milk supply among dairy cattle, lack of gain among cattle on feed and range cattle, and much difficulty of working horses in the field have been reported as a consequence.

OX WARBLE (Hypoderma lineatum DeVill.)

Texas

F. C. Bishopp (August 25): O. G. Babcock reports the finding of third and fourth-stage larvae of H. lineatum in the backs of cattle in the vicinity of Sonora. This is exceptionally early for the appearance of this pest, even in the plateau region, where it normally appears in the backs of cattle almost two months earlier than in the vicinity of Dallas.

THROAT BOT-FLY (Gastrophilus nasalis L.)

Texas

F. C. Bishopp (August 25): The throat bot-fly has been causing some annoyance to horses during the last three weeks, but the common bot-fly, G. intestinalis, is not yet in evidence.

A HORSE-FLY (Tabanus lasiophthalmus Macq.)

New Hampshire

F. C. Bishopp (June 25): Cattle in the vicinity of Durham are being considerably worried by tabanids, with the above species predominating. As many as 15 specimens were observed attacking an animal at one time.

POULTRY

FOWL TICK (Argas miniatus Koch)

Texas

D. C. Parman (July 21): The heavy infestations of early spring at Uvalde have been checked somewhat, but the loss in most flocks has been above 5 per cent and in some as high as 50 per cent. A probable average would be about 8 per cent during the last two months.

O. G. Babcock (August 15): The fowl tick is on the increase at Sonora, and is more numerous than for several months. Many reports are coming in with regard to this pest. Control and eradivative measures are being put into practice.

INSECTS INFESTING HOUSES AND PREMISES

TERMITES (Reticulitermes flavipes Kol.)

Indiana

J. J. Davis (August 22): Termites seem to be more and more destructive farther north each year. This year we found a very serious infestation in a dwelling at Buck Creek, 10 miles north of La Fayette. The house had to be completely rebuilt in parts. We have also had reports of injury to napkins and other linens by this insect.

CRICKETS (Gryllidae)

Indiana

J. J. Davis (August 22): Crickets were so annoying in a dwelling at Gary that control measures were requested.

SCORPIONS

Texas

F. C. Bishopp (July 25): Scorpions have been reported in a number of residences, especially of brick and stone construction.

THE INSECT PEST SURVEY BULLETIN

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BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

OUTSTANDING ENTOMOLOGICAL FEATURES IN THE UNITED STATES FOR SEPTEMBER, 1923

Reports made during September indicate that the Hessian fly is more abundant than usual over the southern third of Indiana and Illinois, and that the situation is also threatening in Missouri and Nebraska.

Heavy rains in Illinois and Missouri reduced the seriousness of the heavy chinch bug infestations. Chinch bugs, however, are more numerous over the greater part of the chinch bug belt, particularly in the northern limits, than last fall.

The European corn borer infestation appears to be increasing in intensity in Ohio.

The garden webworm continues to be destructively abundant in alfalfa in Indiana, Illinois, and Nebraska, being especially serious on new plantings.

The most serious outbreak of the cotton leafworm that has occurred for several years is recorded this year throughout the Cotton Belt. Northern flights of the moths brought them into New England and the Lake Region between September 3 and 15, where some damage was recorded to fruit, by the feeding of the moths.

Of 340 points in the Cotton Belt reporting on the boll weevil situation late in August and early in September, 173 reported serious damage by this pest.

The birch leaf-skeletonizer is again reported as seriously damaging birch trees in Massachusetts, Connecticut, and southern New Hampshire.

Spruce and fir have been seriously defoliated in parts of Idaho, California, and Wyoming by the spruce budworm.

The bee louse has been found well established in Carroll County, Md. This is the first record of this insect being actually established in this country, although it has been repeatedly introduced on imported queenbees.

OUTSTANDING ENTOMOLOGICAL FEATURES FOR CANADA FOR SEPTEMBER, 1923.

The wheat-stem sawfly appears to be still spreading in Manitoba and there is little doubt but that it is present in all the wheat growing areas in the province but only in small numbers in northwestern districts. This insect has not been as prevalent in the crops this year as in 1922, due to cool weather and the parasite Microbracon cephi, which has been found in most of the worst cephus infested areas.

The Hessian fly made no appreciable headway in eastern Canadian Prairies during the past season, despite our expectations of the spring.



The chinch bug shows a greater area of infestation in Saskatchewan than formerly reported. This insect apparently covers an area of 1500 square miles over partially settled prairies with great expanses of unbroken land. The infestation seems to centre at Lacadena, Sask.

The cutworm, Feltia ducens, Wlk. is very plentiful in southern Alberta, and has been by far the most numerous Noctuid taken by traps at Lethbridge.

There has been an extensive outbreak of crickets in southern Manitoba which have caused much inconvenience by their feeding activities on binder twine.

The Colorado potato beetle has been a very great pest in Manitoba this past summer, particularly in mid-northern regions. An increase in this pest has been observed in Saskatchewan.

The green apple bug, Lygus communis, which during the last few years declined in numbers, is now apparently on the upgrade, becoming more numerous again.

The fall webworm has been observed in unusual numbers in southern Manitoba, eastern Ontario, and central and western Quebec. Parasites appear to be abundant.

The larch sawfly defoliated wide areas this summer in Alberta, extending as far west as Edson, but not having as yet reached the B. C. boundary line along the route of the Canadian National Railways.

The birch leaf-skeletonizer is more abundant this year than usual, occurring through Ontario wherever the birch is found growing.

CEREAL AND FORAGE - CROP INSECTS

MISCELLANEOUS LEADERS

GRASSHOPPERS (Acridiidae)

Wisconsin A. A. Granovsky (August 26): The northern part of Door County is seriously infested with grasshoppers, the principal species being Camnula pellucida, although other species are present. The loss in crops is from slight to almost complete. The grains, such as barley, oats, wheat, and even rye, suffered badly. Clovers and alfalfa were defoliated at Sturgeon Bay, reducing the value of hay. Melanoplus bivittatus occupies second place in this county. It has been observed that this species prefers lower places with larger grass, especially on the newly broken land. Many specimens of this species were infested with nematodes, as many as 2 to 6 worms being found in some specimens.

S. B. Fracker (September 15): Melanoplus atlanis and Camnula pellucida were much more abundant than usual in most of the State. The severe epidemic of last year in the northeastern counties was not repeated, however. Complaints were received from Adams, Dane, Door, Dunn, Forest, Grant, Iron, Juneau, Marinette, Monroe, Oneida, Washburn, and Wood Counties.

- Georgia W. F. Turner (September 15): Grasshoppers are very abundant (three or four species) all through the middle part of the State. I wonder if the fact that so many fields have been turned out in the past year or two hasn't something to do with this. It is in such abandoned fields, grown up to weeds and much crab grass, that the hoppers are most abundant.
- Nebraska M. H. Swenk (August 15 to September 15): Reports of moderate grasshopper injury from south-central Nebraska, east to Kearney and Thayer Counties, were received during August. Newly sown alfalfa fields in Saline County, and also in York County, were reported injured by grasshoppers during the first two weeks of September.
- Texas O. G. Bacock (August 18): Melanoplus differentialis Thom. is fairly numerous, but seems to attack only the yucca, eating the margins until the leaves are practically ruined. The center bud or young leaves are not attacked, because the cattle had previously eaten them while young. Oak leaves, other shrubs, and grasses apparently were not attacked, at least while the yucca was present.
- Washington A. L. Molander (September 7): Grasshoppers appear to be less abundant than usual, there being but few complaints where formerly we have had dozens of letters. Everbearing strawberries are reported as being destroyed near Spokane. At Fruitland one correspondent writes: "Early this spring I noticed the tiny hoppers by the millions in the pastures. The hoppers were quite large about the time the pasture was getting pretty bare and I noticed that, wherever the Jim Hill mustard was, they were busy at work. They stayed with that until the seed pods were emptied, when they moved on. The tops of our potatoes were totally demolished, but the tubers were far enough along so that they were not spoiled. They stripped about 3 acres of field corn until just the stalks stand. They have eaten the silk off all the ears of the 10-acre patch and have eaten right down into many of the cobs. They ate the strawberries and vines in a short time, when they settled on the carrots and turnips. Peas, parsnips, and watermelons they do not bother much, but asparagus disappeared as fast as it came up. Onion tops were eaten down and in a few instances they ate down into the onion. When they reached the house they became a terrible pest, eating the flowers in the yard, and even the mosquito bar off the windows."

WHITE GRUBS (Phyllotega spp.)

- Wisconsin A. A. Granovsky (August 29): White grubs are common in the region about Sturgeon Bay on account of a large acreage of wild, uncultivated land, where the pest is breeding. The injury is variable, owing to the cultural methods used by individual farmers and the newness of land used in cultivation.
- S. B. Fracker (September 15): This insect is apparently absent in the grub stage in the extreme northern counties this year. Elsewhere it is generally distributed in both 1-year and 2-year stages. No heavy losses have occurred.



WHEAT

HESSIAN FLY (Phytophaga destructor Say)

- Indiana J. J. Davis (Purdue University Insect Notes No. 19): The Hessian fly infestation is not noticeably heavy in wheat stubble in northern Indiana, except in fields sown before the fly-free date last year, but is abundant in the southern third of the State. Counts made by W. H. Larrimer, of the U. S. Entomological Laboratory, show the infestation of stubble in the southern third of the State to be from 8 to 38 per cent, enough to cause a serious infestation in wheat sown before the fly-free date. Because of this infestation it is important that all wheat growers in southern Indiana adhere to the fly-free sowing dates, and it is equally important, if not more so, that the wheat growers of northern Indiana use similar precautions and cooperate in sowing after the fly-free dates in order to maintain the minimum infestation.
- Illinois W. P. Flint (September 13): Abundant rainfall throughout the State has caused a heavy growth of volunteer wheat. Apparently, eggs are being deposited in about normal, or a little more than normal, numbers in northern and southern Illinois, but very much less than normal numbers in the central part of the State, where the fly has been very scarce during the past season.
- Wisconsin A. A. Granovsky (August 29): The Hessian fly was observed, I believe, for the first time in Door County during this year. It was quite destructive in several wheat fields and also attacked rye fields to some extent. It probably has been here for several years, but only this year was damage noticed. (September 15): This pest is not a serious factor in wheat production in this State.
- Minnesota A. G. Ruggles (September 29): The Hessian fly seems to be decidedly on the increase. Last year we found it doing considerable damage in one or two counties, while this year I have had reports from a number of counties, yet no reports on the extent of the damage done. Unfortunately, I have had no time to devote to the problem and have been unable to work out so far the fly-free dates. Practically all of these infested counties so far are in the southern part of the State and are in the region where winter wheat is being grown more and more extensively.
- Missouri A. F. Satterthwait and R. A. Blanchard (September 4): Three fields at Pacific were left uncut because of the Hessian fly and Harmolita tritici combined. Dissection of flaxseeds shows an extremely small per cent of live Hessian fly forms. The majority of puparia were parasitized, while some dead, moldy larvae were found.
- R. A. Blanchard (September 4): Infestation by the Hessian fly, as shown by examination of wheat stubble, is light in the vicinity of Webster Groves. Dissections of flaxseeds showed an extremely small percentage of live Hessian fly forms within the puparia. (September 7): First eggs of the Hessian fly were found September 7. However, upon examination of volunteer plants, several white larvae a week or so old were found.

L. Haseman (September 12): The fly situation continues threatening. Farmers are preparing wheat ground early with rains favoring this work. The Department of Entomology is making a drive on delaying seeding until the fly-free date. We hope to handle threatening outbreaks with the cooperation of our growers. The infestation is less threatening across the central part of the State.

Nebraska M. H. Swenk (September 1-15): At the Hessian fly observation station, established near Plattsmouth, Cass County, where the examination of 1,600 wheat plants showed an average infestation of 6.6 per plant, the insects began to emerge September 1 and were moving about in the fields in force by September 4. There was a heavy emergence from September 4 to 9, so that by the latter date over 40 per cent of the flaxseeds in the stubble had given up their flies. Egg laying began on September 6, and on September 11, 1,680 eggs were laid on 100 wheat plants. Emergence slowed up after September 9 and cool weather of the last few days has checked activity in the fields, but a heavy wave of emergence is looked for following the next few warm days.

JOINTWORM (Harmolita tritici Fitch)

Wisconsin A. A. Granovsky (September 15): This pest is rarely injurious in Door County.

Missouri A. F. Satterthwait and R. A. Blanchard (September 4): Wheat around Pacific is very heavily infested by this pest, in some fields nearly 100 per cent of the shoots being infested. Three fields were left uncut because of the damage done by this pest and Hessian fly together.

A PENTATOMID (Chlorochroa congrua Uhl.)

Washington A. L. Melander (September 7): Chlorochroa congrua Uhl. was just sent in by one of our former entomology students from Roberts, Idaho, with the following note on habits: "It is ruining about 10 per cent of the wheat crop here. It sticks its piercing mouth parts into the kernel of wheat during the milk stage and feeds, causing it to shrivel. They are very numerous near Mud Lake."

WHEAT SAWFLY BORER (Cephus pygmaeus L.)

New York G. E. Smith (July 14): This pest is very bad in wheat fields this year in Orleans County and is causing much heavier damage than the Hessian fly.

Wisconsin A. A. Granovsky (August 28): Practically all fields of wheat in Door County were slightly infested with wheat sawfly borers, but injury was rather slight. All injured plants dried before harvesting and the grain was not filled properly.

CORN

CHINCH BUG (Blissus leucopterus Say)

- Indiana J. J. Davis (September 18): Chinch bugs are now common in all cornfields. The second generation of bugs did very little damage this year, owing to the fact that egg laying for the second generation was late and at the time the eggs hatched and the young bugs began to feed the corn was practically beyond the stage of injury, except in cases where the bugs were very abnormally abundant. There is an abundance of bugs to go over the winter.
- Illinois W. P. Flint (September 13): Heavy rains have occurred, over most of the area infested, during the past two weeks. These rains have greatly retarded the development of the second-brood nymphs. Sufficient numbers have survived the rains, so that there will probably be more adults entering hibernation over most of the infested territory than was the case in the fall of 1922.
- Minnesota A. G. Ruggles (September 29): At Brookpark, in Pine County, the chinch bugs seem to have become established again. They did considerable damage this year to crops in that region. We are putting on a community campaign in that area this fall.
- Missouri L. Haseman (September 12): Since the summer migration of the pest to corn, the situation as regards the chinch bug seems much improved over the State as a whole. The northern part of the State, two-thirds or more, has had plenty of rain, and corn has not suffered from this pest as we feared it would earlier.
- Nebraska M. H. Swenk (September 1-15): Reports from the Harlan County infested area indicate that early in September practically all of the cornfields were more or less infested with the chinch bug. Practically the same report comes from the restricted Saline County infestation, also.
- Oklahoma E. E. Scholl (September 20): The chinch bug situation in the northeastern part of the State is again serious this fall. Where specific instructions were followed last winter in the burning campaigns, bugs are not so numerous. A much more widely extended burning campaign will be inaugurated by this Department some time in October.

CORN EARWORM (Heliothis obsoleta Fab.)

- Florida J. N. Tenhet (September 20): Damage is general over Gadsden County. In many cases 10 per cent or more of string beans are rendered unmarketable by the larvae boring into the pods.
- Wisconsin S. B. Fracker (September 15): This pest is later than usual and damage is slight. It has been reported from Dane, Grant, and Wood Counties.

Missouri

L. Haseman (September 12): This pest has increased abundantly of late. Late field and sweet corn is being seriously damaged by it. The last of August the pest did some damage to growing tips of tobacco as "budworm".

Louisiana

T. H. Jones (September 4): We have been making observations on the number of ears injured by the earworm this year in a field of corn (field) at Baton Rouge where small successive plantings have been made. Examinations of the ears on one row of each planting have been made when the corn reached the roasting ear stage. The following are the results of these examinations:

Corn planted.	:	Ears examined.	:	Ears containing earworms or showing evidence of their work.	:	Ears without earworms and showing no injury by them.
March 10	:	July 5	:	30	:	8
17	:	10	:	18	:	20
April 7	:	23	:	42	:	28
21	:	27	:	49	:	22
28	:	31	:	44	:	34
May 5	:	Aug. 3	:	23	:	23
12	:	10	:	81	:	0
23	:	20	:	63	:	0
28	:	25	:	82	:	0
June 2	:	27	:	62	:	1

New Mexico

R. Middlebrook (September 13): The corn earworm has done about 5 per cent damage to the cotton and about 10 per cent damage to the corn, the heaviest damage to the corn being in the sweet corn.

SUGAR-CANE BORER (*Diatraea saccharalis* Fab.)

Louisiana

T. H. Jones (September 4): We have been making observations on the number of stalks injured by the "borer" this year in a field of corn at Baton Rouge where small successive plantings have been made. Examinations of the stalks in one row of each planting have been made at the time the ears reached the roasting ear stage. The following are the results of the examinations:

Corn planted.	:	Stalks examined.	:	Stalks containing larvae or pupae or showing injury by larvae.	:	Stalks without larvae or pupae and showing no injury by larvae.
March 10	:	July 5	:	7	:	34
17	:	10	:	21	:	25
April 7	:	23	:	59	:	23
21	:	27	:	61	:	29
May 5	:	Aug. 3	:	25	:	47
12	:	10	:	44	:	34
23	:	20	:	57	:	19
28	:	25	:	86	:	1
June 2	:	27	:	61	:	2

exas

T. C. Barber (August 20): The sugar-cane borer has been reported from several localities as causing considerable damage to the second crop of broom corn. The first cutting was scarcely affected, but a great number of stems have been bored in the second cutting, causing considerable breaking off by the wind.

ew Mexico

R. Middlebrook (September 13): The loss in the corn crop this year in the eastern half of the State caused by the larger corn stalk-borer, saccharalis or zeacolella, is estimated at 30 per cent. This has become a very serious problem with us since we can not practice fall plowing because of the danger of the land blowing away and we cannot rotate.

EUROPEAN CORN BORER (Pyrausta nubilalis Hbn.)

Ohio

H. A. Gossard (September 18): Considerable increase in the degree of infestation by this pest has been noted during the past month in the infested territory. Two fields have been observed which yielded as high as 10 per cent of the stalks infested. No definite indication has yet been found that the insect will be two-brooded this season under Ohio conditions.

YELLOW-BEAR CATERPILLAR (Diacrisia virginica Fab.)

ashington

A. L. Melander (September 7): Yellow-bear caterpillars have recently been sent from Seattle as injuring a field of sweet corn. According to G. T. Wallsted, who furnished the specimens, "The caterpillars eat off the silk and sometimes part of the young tips of the ear. Usually when the silk is eaten off they migrate to another ear." This is a new record with us.

CORN-SILK BEETLE (Luneros varicornis Lec.)

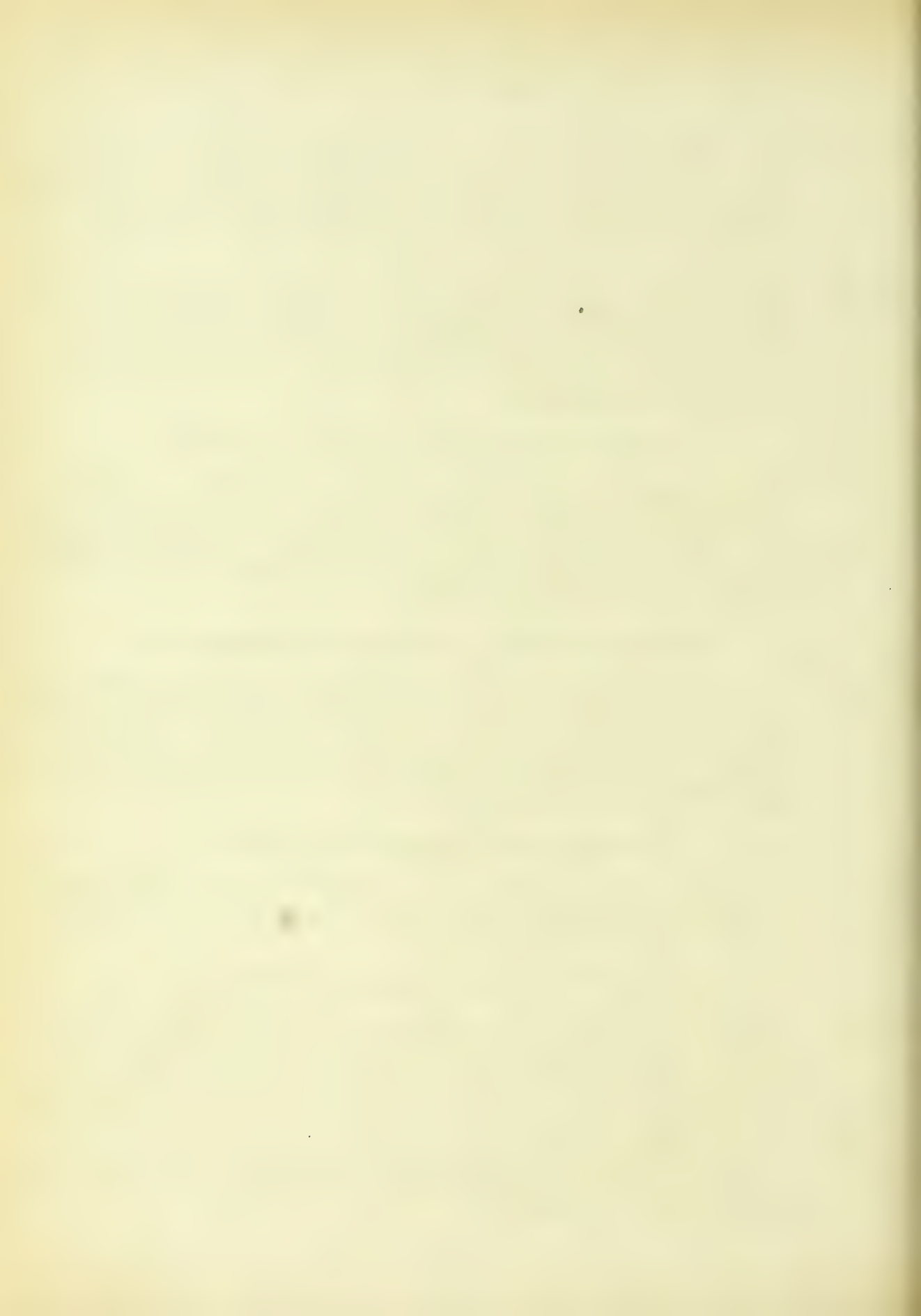
Alabama

W. E. Hinds (August 28): The corn-silk beetle has been reported from several localities this season. Especially serious damage was done in Tuscaloosa County.

BELTED CUCUMBER-BEETLE (Diabrotica balteata Lec.)

ouisiana

Bureau of Entomology Monthly News Letter No. 112: C. E. Smith reports that considerable injury has been done to corn in Louisiana by the belted cucumber-beetle. This insect, in destroying the silk of the corn ear, has retarded pollination, and in some fields a large number of poorly developed ears were noted. Similar injury has previously been noted as being caused by the beetle of the western corn rootworm, Diabrotica longicornis Say, but this is the first instance in which such injury has been found to be due to the attack of D. balteata.



CORN-LEAF APHID (Arhis maidis Fitch)

Nebraska M. H. Swenk (August 15-31): During the third week in August there was a report of such an abundance of the corn-leaf aphid in a Saline County field that the plants showed evident stunting and injury.

ALFALFA AND CLOVER

FALL ARMYWORM (Larhygma frugiperda S. & A.)

New Mexico R. Middlebrook (September 13): The fall armyworm is reported as present in Estancia Valley.

COTTON CUTWORM (Prodenia ornithogalli Guen.)

Nebraska M. H. Swenk (September 1-15): Toward the middle of the month enough individuals of the cotton cutworm occurred in alfalfa fields in this district to confuse some farmers as to the real cause of the consuming and webbing of the leaves in some of the old alfalfa fields.

GARDEN WEBWORM (Loxostege similalis Guen.)

Indiana J. J. Davis (September 18): One report of injury to young alfalfa by the alfalfa webworm was received from the extreme northern end of the State, Elkhart County, August 28.

Illinois W. P. Flint (September 13): The garden webworm is attacking alfalfa. This insect has been abundant throughout western Illinois, where it has destroyed many new plantings of alfalfa seeded during August, 1923. It has not been sufficiently abundant to cause any damage to older fields.

Missouri L. Haseman (September 19): This pest has matured its summer brood. Moths were abundant on wing September 1.

Nebraska M. H. Swenk (August 15-31): As a result of the great abundance of moths of the garden webworm, which were flying during August, report of injury to the third cutting of alfalfa, and especially of injury to fields of young alfalfa sown late in July or early in August, by the third brood of webworms, began to be received August 21 and have continued until the present writing. The reports to date have come from Otter, Gage, Lancaster, Seward, York, Adams, and, during the last few days in August, from Boone and Pierce Counties. Many of the webworms are yet small, so that very likely injury will continue for several days into September. (September 1-15): Injury to alfalfa by the garden webworm continued through the first week in September. Reports came during this period chiefly from Antelope and Boone Counties, but also from Knox County to the north and from Nance and Merrick Counties to the south, these counties forming a line along the 96th Meridian north of the Platte River in this State. In nearly every case it was recently sown alfalfa that was most damaged.

FRUIT INSECTS

APPLE

APPLE-GRAIN APHID (Rhopalosiphum prunifoliae Fitch)

Wisconsin

A. A. Granovsky (August 17): In Door County this insect is reported as quite common. (August 26): In the early spring of this year the apple bud aphid appeared in great numbers infesting buds of the apple trees and especially flowering clusters at Sturgeon Bay. Large colonies were present on leaf petioles and calyxes of the flowers. Later this species was observed on oat plants in the fields.

CODLING MOTH (Carpocapsa pomonella L.)

Massachusetts

A. I. Bourne (September 25): A report from eastern Middlesex County the early part of the month stated that the second brood of codling moth and late curculio work were beginning to show up at that time very badly in maturing apples.

Missouri

L. Haseman (September 12): Unsprayed fruit is almost a complete loss from worms and diseases. Second-brood worms appeared late but are maturing off now at this date, with no serious signs yet of the third brood of "pin worms" in central Missouri.

New Mexico

R. Middlebrook (September 13): The codling moth has caused 10 to 20 per cent of rejections in apples at the packing plants.

California

T. D. Urbahns (September 13): The codling moth was kept well under control in orchards properly sprayed in the Beaumont apple district. Some of these orchards showed less than 2 per cent of wormy fruit, while some of the poorly sprayed orchards show a heavy infestation. Larvae were rapidly going into hibernating quarters.

RED-HUMPED CATERPILLAR (Schizura concinna S. & A.)

New Hampshire

P. R. Lorry (September 9): At North Stafford there is a small infestation of this insect on apple.

New York

G. E. Smith (August 18): In Orleans County this insect is present in two young orchards.

Ohio

H. A. Gossard (September 18): This insect was received from Cambridge and Ravenna, attacking apple.

APPLE AND THORN SKELETONIZER (Hemerophila pariana Clerck)

Massachusetts A. I. Bourne (September 25): The apple and thorn skeletonizer seems to be increasing badly throughout the Connecticut Valley region at least, and, while this last brood has not turned out to be quite as bad as was anticipated from the evidence we had of the second brood in August, yet isolated trees or those which have not received pretty careful spraying are very badly browned. This insect has spread in numbers enough to be a serious pest from the Connecticut Valley region at least as far east as Worcester County, where reports from the County Extension Service state that in many sections of the county the insect can be found and, apparently, it is very generally distributed over that region, although the county agent stated that damage to individual trees is not very heavy. Of course, in well-sprayed orchards, as would be expected, there is very little evidence of injury from this insect, although in most cases, at least, traces of its work can be found. I was able to personally observe the presence of this species in northeastern Essex County, which would seem to indicate that although not yet in large numbers the pest has spread clear across the State, and we can probably look for increased abundance throughout the State, as a whole, another year.

Connecticut W. E. Britton (September 24): This insect now shows all over the State.

LESSER APPLE WORM (Laspeyresia prunivora Walsh)

Pennsylvania S. W. Frost and E. M. Craighead (September 15): The lesser apple worm is more abundant than noticed before. Together with the leaf-roller Eulia velutinana Walk., it is causing considerable late injury to the fruit.

A TORTRICID (Amorbia humerosana Clem.)

Pennsylvania S. W. Frost (September 13): The leaf-roller Amorbia humerosana Clem. is exceedingly abundant this summer in some orchards in York and Cumberland Counties. Summer Rambo showed as high as 25 per cent injury.

HAG MOTH (Phobetron pithecium S. & A.)

Ohio H. A. Cossard (September 18): The hag moth larva was received from Utica, August 28, taken in a dwelling house, and on September 25 from Negley on apple.

GREEN FRUITWORM (Xylina antennata Walk.)

New York R. G. Palmer (June 23): In Monroe County, slight damage is being done by this pest to fruit in apple orchards, but in well sprayed orchards good control has been secured.

H. W. Fitch (June 23): In Wayne County this insect is reported working on apples, peaches, and prunes.

P. J. Chapman (June 23): This insect is doing considerable damage to apple and pear in Wyoming County.

E. W. Pierce (July 20): We found this insect in the pupal stage during the month in Ontario County.

Missouri

A. C. Burrill (August 25): Occasional holes in apples apparently due to one of the green fruitworms were noted in the Jim Hayes orchards on August 3 and 9, 1923.

FALL WEBWORM (Hyphantria cunea Drury)

New Hampshire

P. R. Lowry (August 30): The fall webworm is common in Durham on wild cherry, apple, elm, plum, hickory, white oak, birch, and ash. Eggs hatched July 14.

Massachusetts

A. I. Bourne (September 25): The fall webworm has turned out to be slightly more abundant than last year. At this time the larvae are beginning to mature and leave the webs. Mr. Jenks, of West Acton, reports that in his section this pest seems to be unusually abundant. These are the outstanding pests which are facing us at the present time.

Connecticut

B. H. Walden (August 31): Old apple orchards and roadsides are badly infested in Windham, Tolland, and New London Counties.

New York

R. F. Illig (August 9): In Wayne County nests were reported found.

Ohio

E. W. Mendenhall (September 17): The fall webworm is doing considerable damage in apple blocks in nurseries in southwestern Ohio.

New Mexico

R. Middlebrook (September 13): The fall webworm is present but doing little damage in the southern half of the State.

ROSE LEAFHOPPER (Empoa rosae L.)

Pennsylvania

S. W. Frost (September 13): The leafhopper, Empoa rosae L., has been exceedingly injurious this summer. Not only do the leaves show serious injury, becoming almost white in cases, but the fruit shows injury. In many places the fruit is materially spoiled in appearance by the droplets of liquid discharged by the hoppers. The green varieties seem to suffer the most.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Ohio

H. A. Gossard (September 18): The San Jose scale was received August 21 from Hibbith on peach.



- Indiana B. A. Porter (September 21): The San Jose scale has continued to do serious damage at Vincennes. The injury to peach in some instances is fully as severe as that to apple. In some peach orchards many dying branches are in evidence. Crawling young are still abundant.
- Illinois W. P. Flint (September 13): The present season on the whole has been favorable to the growth of this scale, but not as favorable as the two previous seasons. Scale is still abundant in the southern part of the State, and it will require careful spraying in all commercial orchards in that section to keep down the insect the coming year.
- Wisconsin S. B. Fracker (September 15): This is a new location (Union Grove) for this pest. The scale is generally distributed throughout the village.
- Missouri L. Haseman (September 12): The pest has bred abundantly again this summer. Where spraying of orchards was not thorough some fruit is badly blotched by it. A drive is planned for the fall and winter to encourage the use of dormant sprays.

FLAT-HEADED APPLE-TREE BORER (Chrysobothris femorata Oliv.)

- Ohio H. A. Gossard (September 18): Larvae of Chrysobothris femorata Oliv. were brought to us from Canton September 10, where they were reported to have killed a few sugar maples and injured a great number which had been transplanted into the cemetery at Canton in the spring. All these transplanted maples were threatened with destruction. The insects were supposed to have come from an old neglected apple orchard nearby.

EUROPEAN RED SPIDER (Paratetranychus pilosus C. & F.)

- Massachusetts A. I. Bourne (September 25): In some orchards, especially on Baldwins, the European red spider is doing considerable bronzing of the foliage. From my own observation I should judge that it has now spread very generally throughout the northern and northeastern parts of the State, at least, I find several severe cases of its bronzing on Baldwins in orchards in West Newbury, which is in the very upper northeastern corner of Essex County.
- Ohio H. A. Gossard (September 18): The European red spider continues to be seen in northern Ohio orchards but is not so numerous as it was 8 weeks ago. Dormant sprays of miscible oils seem to have given fairly satisfactory results in controlling this species.

PEAR

PEAR SLUG (Caliroa cerasi L.)

- Ohio H. A. Gossard (September 18): The pear slug came from Marion, North Olmsted, and Cleveland on pear.

PEACH

PEACH BORER (Aegeria exitiosa Say)

Georgia O. I. Shapp (September 18): Increased interest is shown in the use of paradichlorobenzene for peach borer control at Fort Valley. Practically all the commercial peach growers in Georgia will use the material this year. Present indications point to the use of 500,000 pounds this fall in the Southeastern States. Georgia peach growers obtained very satisfactory results with the material last year, when 250,000 pounds were used.

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

South Carolina J. A. Berly (August 28): At Clemson College considerable damage was done to a portion of the orchard before this insect was checked.

Ohio H. A. Gossard (September 18): This insect was received from West Unity attacking cherry August 21, and from Hibbith attacking peach.

SNOWY TREE-CRICKET (Oecanthus niveus DeG.)

California T. D. Urbahns (September 3): This insect appeared in abundance on cling peaches about two weeks before the fruit was ready to pick and feeding upon the fruit made punctures about 1/4 inch across and as deep. About 90 per cent of the punctures became infected with brown rot, Sclerotinia fructigena, and out of a crop of 425 tons about 100 tons were lost from this injury.

GREEN SOLDIER-BUG (Nezara hiliaris Fitch)

Ohio H. A. Gossard (September 18): The green soldier-bug was received from Willoughby, August 28, damaging peach. It was noted at Waterville, September 6, injuring peach. In a large peach orchard at Waterville the commercial damage was probably not more than 1 to 2 per cent over the orchard as a whole, but individual trees could be found where the commercial damage would reach 15 to 20 per cent and where at least 50 per cent of the peaches had been punctured and disfigured in all degrees, from slight to severe. Both the nymphal and adult forms were observed to be still active and puncturing peaches September 6. They have also done more damage in the vicinity of Fort Clinton than for several years.

G. A. Runner (September 20): The green soldier-bug has caused considerable loss in many commercial peach orchards in the northern part of the State. Work of the insect has been noted in nearly all of the counties bordering on Lake Erie. In several orchards examined in Lorain, Erie, and Ottawa Counties, some of the trees showed a high percentage of deformed and unsalable fruit. In fruit packing houses in Ottawa County many of the cull peaches showed characteristic feeding marks of the soldier bug.



SILVER LEAF MITE (Phyllocoptes cornutus Banks)

Pennsylvania S. W. Frost (September 13): The silver leaf mite Phyllocoptes cornutus Banks has been found abundant in some orchards in Adams County. Heretofore, this species was found only in small numbers.

PEACH-TWIG MOTH (Anarsia lineatella Zell.)

Delaware C. O. Houghton (September 15): Dead terminals, due to injury by this species, are very common on peach in Newark.

ORIENTAL PEACH MOTH (Laspeyresia molesta Busck)

Connecticut W. E. Britton (September 24): This insect was abundant in twigs of peach trees in Greenwich in June. Now the larvae are in the fruit as far east as New Haven.

Pennsylvania S. W. Frost and E. M. Craighead (September 13): The oriental peach moth is exceedingly abundant this summer on peach, although it has also been found on apple. In the vicinity of Collegeville, Pa., nearly 60 per cent of the late peaches are injured by this pest. About 25 per cent of the early crop showed injury.

CHERRY

PEAR AND CHERRY SLUG (Caliroa cerasi L.)

Wisconsin A. A. Granovsky (August 17): This slug is very common in local spots in Door County.

PLUM

PLUM CURCULIO (Conotrachelus nenuphar Ebst.)

Georgia Oliver I. Snapp (September 18): There will be practically no second brood of the plum curculio in Fort Valley, Ga., this year. To date only one adult of the second generation has been reared, and only four larvae of the second brood have reached maturity. This shows a great variation in the life history of this insect in the South, as for some reason there are two full generations. Last year a third generation was reached in the insectary. Climatic conditions are perhaps the factors which determine the size of the second brood here.

Wisconsin S. B. Fracker (September 15): This year's abundant apple crop shows considerably less curculio injury than usual.

GREEN PEACH APHID (Myzus persicae Sulz.)

New York R. F. Illig (July 7): This aphid is found generally throughout Wayne County.

H. W. Fitch (July 7): In Wayne County this insect is becoming abundant in prune orchards.

R. G. Palmer (July 15): In Monroe County this insect is quite common.

COTTON RED SPIDER (Tetranychus telarius L.)

California T. D. Urbahn (September 20): This mite has been unusually abundant in many prune orchards this year, especially in the Sacramento Valley. Many trees were completely defoliated in spite of the efforts of fruit growers to control the pest by spraying. The presence of dense webs and the folding of leaves interfered with applying insecticides.

RASPBERRY

RASPBERRY CANE-BORER (Oberea bimaculata Oliv.)

Ohio H. A. Gossard (September 18): This borer has been reported from Akron, Ohio, attacking raspberries.

GRAPE

GRAPE TUBE GALL (Cecidomyia viticola O.S.)

Ohio H. A. Gossard (September 18): The grape tube gall was received from Ottawa where it was attacking grape.

GRAPE PHYLLOXERA (Phylloxera vitifoliae Fitch)

Ohio H. A. Gossard (September 18): Phylloxera vitifoliae came from Mesopotamia September 8.

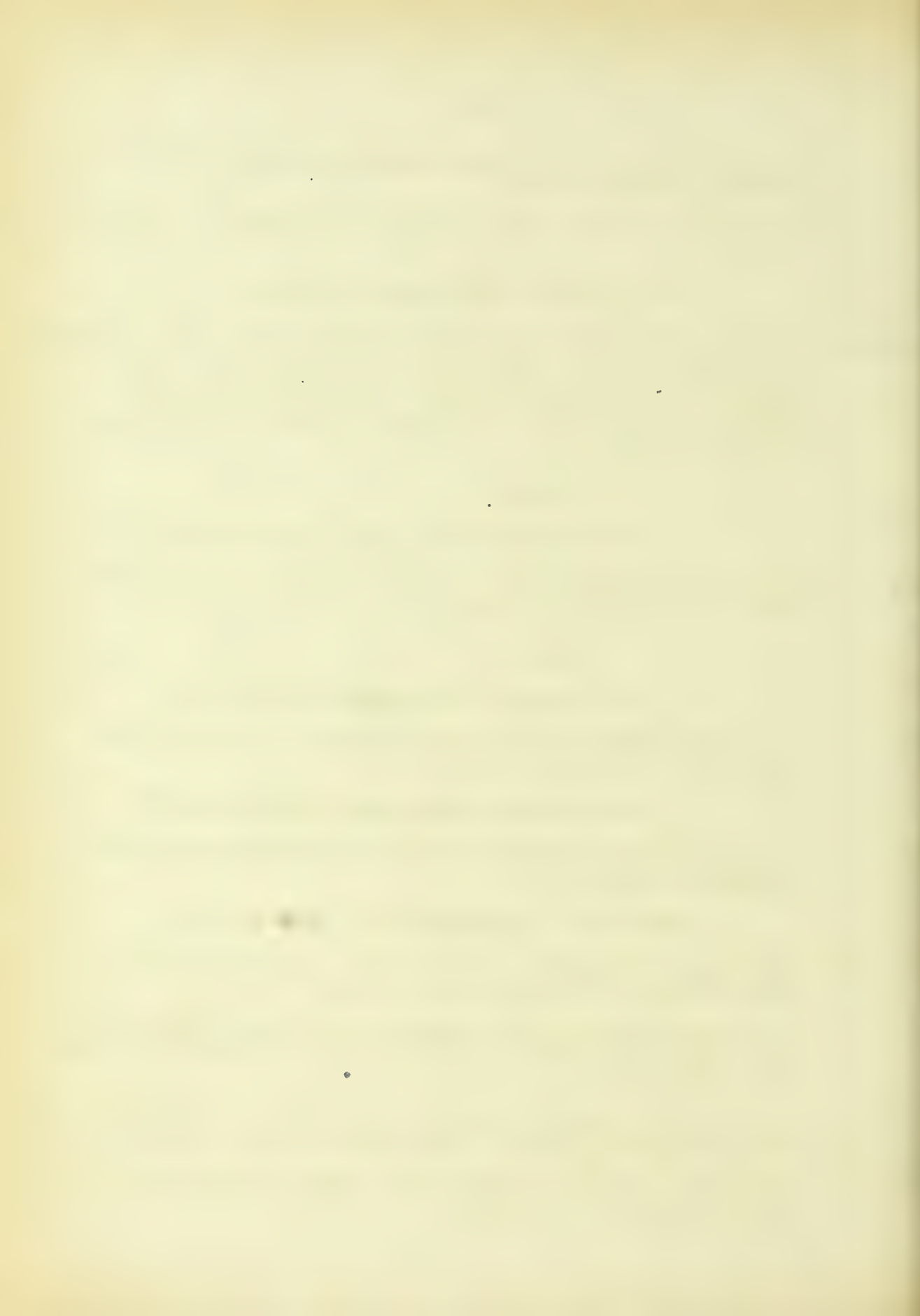
ROSE CHAFER (Macrodactylus subspinosus Fab.)

New York C. C. Wagoner (June 30): The rose chafer is still being held in check with an excess of lime spray in Ulster County.

C. E. Smith (June 30): This insect has been unusually abundant and destructive on apples and peaches in a large number of orchards in Orleans County.

R. G. Palmer (July 15): The rose chafer is severe this year, doing considerable damage to apples and peaches in Monroe County.

E. W. Pierce (June 30): This pest was found abundant in one cherry orchard in Ontario County.



F. H. Bond (June, 1923): We found grape, apple, and cherry in two orchards in Oswego County infested by this insect. They were cleaning up fruit and foliage. An arsenate-molasses spray seemed to check them and a few dead ones could be found.

GRAPE LEAFHOPPER (Erythroneura comes Say)

Delaware C. O. Houghton (September 20): These leafhoppers have caused considerable damage here this season and are still very abundant on the vines.

GRAPE-BERRY MOTH (Polychrosis viteana Clem.)

Delaware C. O. Houghton (September): A considerable amount of injury by this species has been noticed at Newark this year.

PECAN

PECAN SHUCKWORM (Laspeyresia caryana Fitch)

Alabama W. E. Hinds (August 28): The pecan shuckworm seems to be unusually abundant and is now causing the dropping of healthy grown pecans.

REGAL MOTH (Citheronia regalis Fab.)

Georgia O. I. Snapp (September 16): Larvae of the regal moth were noted on this date feeding on pecan. Each fall these large larvae are brought to the laboratory by alarmed pecan growers.

FALL WEBWORM (Hyphantria cunea Drury)

Florida Jeff Chaffin (September 10): The fall webworm is very abundant this year in practically every pecan grove in the State.

FULLER'S ROSE BEETLE (Pantomorus fulleri Horn)

Georgia W. F. Turner (September 12): Weevils are very abundant on pecan foliage in two or three groves at Barnesville. They are mostly grouped in clusters of from 6 to 10. There is some feeding on the leaves, but this is not serious. I never have seen this insect so abundant.

T R U C K - C R O P I N S E C T S

MISCELLANEOUS FEEDERS

BLISTER BEETLES (Meloidae)

Wisconsin S. B. Fracker (September 15): Epicauta vittata is reported as causing severe local injury to potatoes in Green Lake and Washington Counties.



Louisiana J. W. Ingram (August 27): A number of fields of soy beans in the vicinity of Crowley were almost completely defoliated by the striped blister beetles during the month of August.

PEPPER WEEVIL (Anthonomus eugenii Cano)

New Mexico W. E. Emery (September 12): This insect attacked the Chili pepper crop in the locality of Mesilla Park last year, doing at least 50 per cent damage to the fruits. There are none noticeable this year, due to some unknown reason.

A WEEVIL (Listronotus latiusculus Boh.)

Illinois W. P. Flint (September 13): A weevil, probably Listronotus latiusculus, has been generally destructive to carrots in two of the south-central counties. Adults have not yet been obtained but larvae and pupae have been identified by Dr. Chittenden as probably of this species. In the area mentioned there is a general destruction of carrots in gardens.

POTATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

New York R. F. Illig (August 16): This pest can be found in almost every potato patch in Wayne County.

Wisconsin A. A. Granovsky (August 18): This spring early potatoes were quite seriously injured in Door County by this pest, while later potatoes escaped serious damage, the average damage being moderate. At present all larvae have disappeared, and only an occasional adult beetle is present.

S. B. Fracker (September 15): This pest is slightly less destructive than in 1921 and 1922.

WHITE GRUBS (Phyllophaga spp.)

New York A. D. Davies (August 18): Have a very serious outbreak of white grubs near Gravesville, practically destroying the meadows and potatoes on two farms. As many as 23 grubs have been found in one hill of potatoes and practically all potatoes are eaten so severely that they are worthless.

POTATO APHID (Macrosiphum solanifolii Ashm.)

Wisconsin S. B. Fracker (September 15): Distribution of this pest is widespread but there is little or no direct injury, although the insect may be responsible for the general spread of potato mosaic. Seen in Door, Langlade, Oneida, Forest, Waupaca, and Portage Counties.

GREEN PEACH APHID (Myzus persicae Sulz.)

Wisconsin A. A. Granovsky (August 17): This pest is more abundant than Macrosiphum solanifolii in Door County.

POTATO LEAFHOPPER (Empoasca mali LeB.)

New York E. W. Pierce (August 18): This pest can be found in most fields of potatoes in Ontario County and hopperburn injury is quite evident.

K. E. Paine (August 18): This pest is causing considerable injury in Chautauqua County.

Wisconsin S. B. Fracker (September 15): This insect caused less injury this year than at any time since 1917. In the southern counties potatoes remained green until the middle of August, one month later than last year. There was some damage in commercial districts of the northern sections but less than usual.

NORTHERN TOBACCO HORNWORM (Phlegethontius quinquemaculata Haw.)

Wisconsin S. B. Fracker (September 15): This pest is injurious in a few fields in Dunn, Waupaca, and probably other counties.

CABBAGE

IMPORTED CABBAGEWORM (Pontia rapae L.)

New York R. F. Illig (August 8): Over the whole of Wayne County. (August 16): The imported cabbageworm is present in 90 per cent of the plantings atodus.

Wisconsin A. A. Granovsky (August 26): Among other cabbage insects the most injurious this year was the imported cabbageworm. In many gardens the cabbage-leaves were completely stripped. This is probably the most important cabbage pest we have in the part of the State around Sturgeon Bay.

CABBAGE APHID (Brevicoryne brassicae L.)

New York W. D. Mills (August 18): One field of cabbage in Nassau County was found infested with the cabbage aphid early this week.

Wisconsin A. A. Granovsky (August 26): Next in importance after the imported cabbageworm is the cabbage aphid in this region (Sturgeon Bay) on cruciferous crops, especially cabbage. It is quite common in all gardens, doing considerable damage to the plants, although that damage is not conspicuous as is the case with many aphids.



HARLEQUIN CABBAGE BUG (Murgantia histrionica Hahn)

New Mexico R. Middlebrook (September 13): The Harlequin cabbage bug has caused a loss of approximately 10 per cent in this State.

ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

Delaware C. O. Houghton (September 20): This species is now to be found in winter quarters at Newark. An unusual amount of injury has occurred here this year.

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

Virginia Neale F. Howard (September 10): This pest was found at Clinchfield, in Russell County.

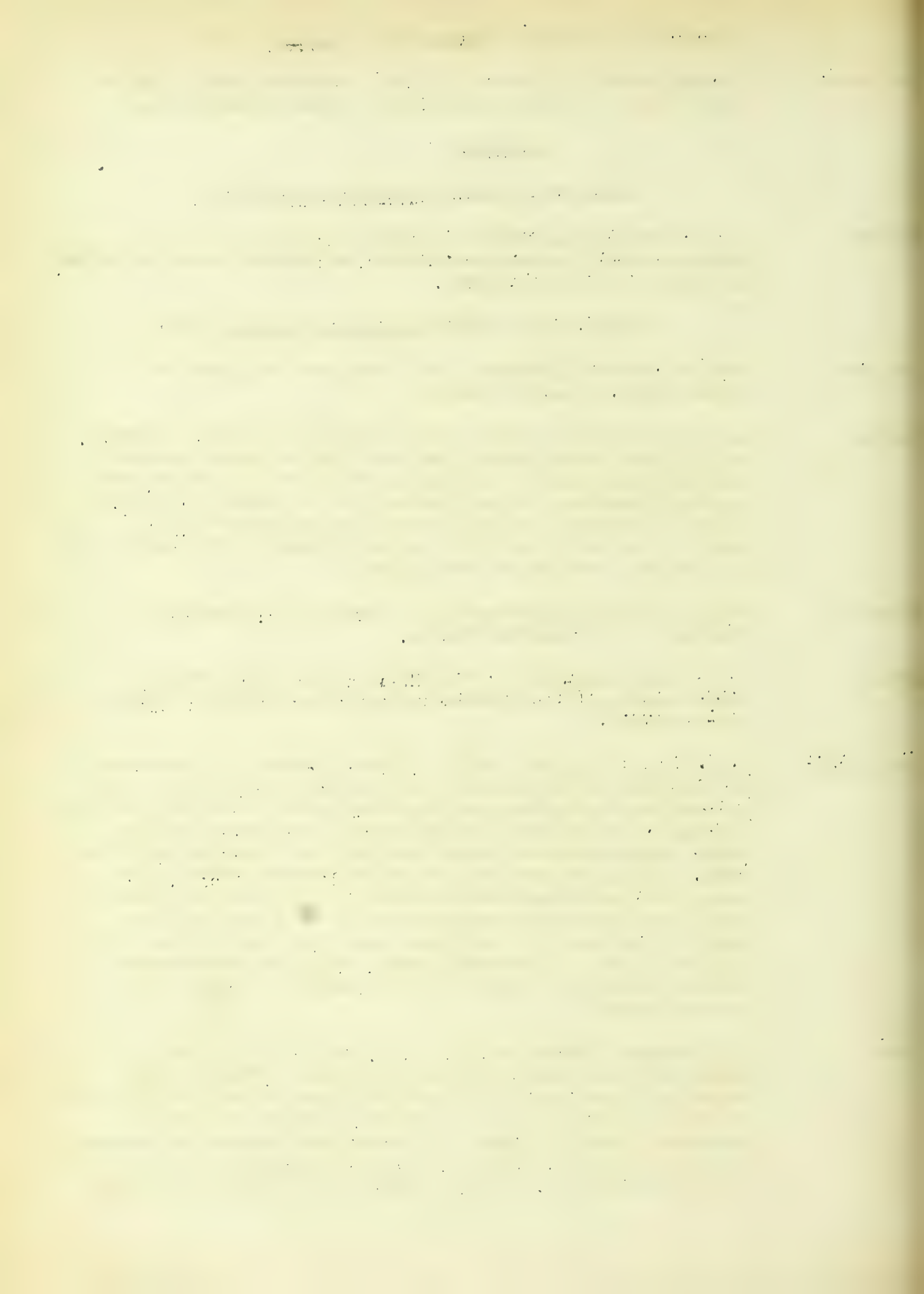
Georgia Neale F. Howard (September 10): This pest was first reported in 1921 from Thomas County, but very little spread occurred that year and in 1922. Mr. Luther Brown, of the Georgia State Board of Entomology, reports under date of August 31 an area of 250 to 300 square miles infested, as compared with 16 square miles last year. The beetle is close to the Florida line in the direction of Monticello.

Tennessee Neale F. Howard (September 10): Found one mile south of Jonesboro, in Washington County.

Alabama W. E. Hinds (August 28): The Mexican bean beetle has been found outside of the Experiment Station grounds near Auburn, in Lee County.

Mississippi R. W. Harned (September 26): Although considerable scouting has been done in practically every county in this State, the Mexican bean beetle has thus far been found in only two counties, Tishomingo and Itawamba, in the northeastern corner of the State. Seven infested properties have been found in Tishomingo County and six infested properties in Itawamba County. No infestation has been found more than 7 miles from the Alabama line. The northernmost point at which the beetle has been found in Mississippi is at Tishomingo or, rather, 4 miles south of Tishomingo, in Tishomingo County, while the southernmost point at which this insect has been found is at Tremont, in Itawamba County.

Ohio H. A. Gossard (September 18): A. E. Miller, of my staff, during the first week in September scouted through Jackson County and found mature larvae of this pest immediately south of Coalton. A batch of eggs was found on the Oak Hill pike immediately south of Clay. Characteristic evidence of feeding was found at several points on the Jackson-Wellston pike in the vicinity of Roads, P. O. All stages of the insect were found



in Gallia County about 2 miles north of Gallipolis. Evidence of feeding was found between Gallipolis and Cheshire. He has since that time found the beetles at Summithill and at Newingsburg in Ross County.

New Mexico

R. Middlebrook (September 13): The harm from the bean beetle in the southern section of the State has been very small in comparison with former years and the total estimated loss does not exceed 10 per cent. The fall string bean crop is well on its way and there will be little or no damage by the bean beetle this year. (September 23): The fall string bean crop is well under way and there is no appreciable damage in the southern half of the State. Crop off soon before injury can take place. Pintos slightly damaged.

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Louisiana

T. H. Jones (August 25): Adults were sent in by county agent from Grant Parish with a letter stating that this bug was "doing quite a bit of damage to peas, beans, and other field and vegetable crops in Grant Parish."

Florida

J. N. Tenhet (September 19): Pods and vines of string beans severely damaged in several fields at Quincy. In one small field, under tobacco shade, about 50 per cent of the vines were killed outright.

GREEN SOLDIER BUG (Nezara hiliaris Fitch)

Michigan

Eugenia McDaniel (August 18): The green soldier bug, Acrosternum hiliaris, has been received this morning from Cass County where it is said to be attacking beans in the field. They puncture the young pods and are causing considerable injury.

LESSER CORN STALK-BORER (Elasmopalpus lignosellus Zell.)

South Carolina J. A. Berly (August 28): This insect has been reported as attacking snap beans and specimens were received from Sumter and Anderson Counties.

PEAS

PEA APHID (Illinoia pisi Kalt.)

Wisconsin

A. A. Granovsky (August 29): The pea aphid at Sturgeon Bay this year was very common on late field peas and canning peas, while early varieties of peas escaped the injury. Such varieties as Rustler, Double Alaska, and Pidgegreed Alaska matured early and were but little injured or escaped the injury, while late varieties were badly infested with this insect.

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S. B. Fracker (September 15): This pest is present and injurious in all commercial pea-growing sections. It is reported from Columbia, Dodge, Door, Ozaukee, Washington, and Winnebago Counties.

PEA MOTH (Samia nigricana Steph.)

Wisconsin A. A. Granovsky (August 29): The pea moth injury varied considerably with the variety of the peas grown. The early varieties such as Rustler and Double Alaska were very little affected, if any, while later varieties suffered considerably. This pest was present in every pea field about Sturgeon Bay.

CUCUMBER

STRIPED CUCUMBER-BEETLE (Diabrotica vittata Fab.)

Wisconsin A. A. Granovsky (August 29): This pest is very common on cucumbers, squashes, etc., around Sturgeon Bay. It is perhaps the most destructive insect on cucumbers, injuring and sometimes completely destroying garden cucumbers, especially of early planting.

PICKLEWORM (Diaphania nitidalis Cramer)

Missouri L. Haseman (September 12): This pest is doing damage now in central Missouri. It destroyed commercial cantaloupe crop in southeastern Missouri last month.

MELONS

STRIPED CUCUMBER-BEETLE (Diabrotica vittata Fab.)

New Mexico R. Middlebrook (August 31): About 20 per cent of the melon crop was replanted. This pest is becoming more abundant each year.

MELON APHID (Aphis gossypii Clov.)

Maine E. M. Patch (September 24): Locally very numerous in Cumberland and York Counties in August and September on cucumbers and squashes.

A CUCUMBER-BEETLE (Diabrotica undecimpunctata Say)

New Mexico R. Middlebrook (September 13): This pest did considerable damage, estimated loosely at 20 per cent, to watermelon and cantaloupe crops in the eastern half of the State, but we have no way of telling the financial loss since there has been such a poor market for watermelons that many of them have not been gathered from the fields.

SQUASH

SQUASH LADY-BEETLE (Epilachna borealis Fab.)

Maryland W. H. White (September 15): Defoliating a small acreage of squash at College Park and Silver Spring.

Virginia W. H. White (September 15): This insect is reported from Arlington as completely defoliating one-fourth of an acre of squash.

ONION

ONION THRIPS (Thrips tabaci L.)

Ohio H. A. Gossard (September 18): Thrips tabaci L. appeared in destructive numbers in onion fields on much land in the western part of the State in late July and early August following extended drought. Crop yields were seriously impaired in some fields, the onions being killed when the boles were no larger than pickling size. Nicotine sulphate applied with a power sprayer was found to give partial success in controlling the outbreak, but heavy rains did more good.

Michigan Eugenia McDaniel (August 18): The onion thrips has been reported from a Michigan onion field at Charlotte, where a good percentage of the crop has been destroyed.

SWEET POTATO

SWEET-POTATO WEEVIL (Cylas formicarius Fab.)

Florida and Georgia Bureau of Entomology Monthly News Letter No. 112. The summer inspection for the sweet-potato weevil in Baker County, Fla., and Charlton County, Ga., has just been finished and the present findings indicate that very successful progress has been made in this work. More complete results will be obtained during fall inspection but the weevil has, apparently, been eradicated in the worst danger centers and it is expected that no unusual difficulty will be experienced in cleaning up the remaining infestations.

Mississippi K. L. Cockerham (August 28): The sweet-potato crop of southern Mississippi has been damaged by the continuous rains which have prevailed during the entire summer. If the heavy and constant rains continue during September and early October the sweet-potato crop in the lowlands around the bayous and rivers will probably sour and rot in the fields before harvest; this rotting in the fields will materially reduce the sweet-potato weevil infestation, as both adult and larval stages perish in decomposed potatoes. The smaller amount of potatoes stored during the winter will also reduce the food supply of overwintering weevils.

BLACK-LEGGED TORTOISE-BEETLE (Jonthoncta nigripes Oliv.)

New Mexico R. Middlebrook (August 26): This is the first year that they have been sufficient to attract much notice in Dona Ana County. I do not believe they have done any appreciable damage although some farmers claim a loss.



SOUTHERN FIELD - CROP INSECTS

COTTON

COTTON BOLL WEEVIL (Anthonomus grandis Boh.)

Weather, Crops and Markets, Vol. 4, No. 10 (September 8): The cotton crop is forecast at 10,788,000 bales on a basis of condition reports averaging 54.1 per cent normal for August 25. The prospective yield indicated from this condition figure is 134.8 pounds per acre, but the final yield may be more or less, according to developments in condition more or less favorable than average. The indicated production is larger than last year and than two years ago, but much smaller than the pre-war average and somewhat smaller than the average during the war period. Both insect damage and unfavorable weather contributed to the heavy reduction in condition during August.

General Statement

B. R. Coad: Observations on the seriousness of boll weevil infestation throughout the cotton belt during August and early September seem to indicate that the heaviest damage is occurring in the Carolinas, Alabama, and Mississippi while heavy damage is also reported from Louisiana, Arkansas, Tennessee, and Georgia. Of 340 different towns in the cotton belt from which reports have been received, 50 per cent report that boll weevil damage is heavy.

Virginia

Herbert Spencer (September 15): This morning the County Agent of Norfolk County brought in to the experiment station specimens of the cotton boll weevil. These were taken at the town of Portlock, about three miles south of Norfolk. Larvae were abundant in all the blighted squares and small bolls.

Alabama

W. E. Hinds (August 26): The boll weevil is causing much more damage in the Southern States than has occurred in recent years.

Oklahoma

E. E. Scholl (September 20): Recent rains came too late to add to the production of cotton but a lot of squares and fresh foliage will be produced to enlarge the fall brood of boll weevils. Weevils are not so numerous, however, at this time of year as they were last year at the same time. An extended weevil campaign is now being started by this institution.

COTTON LEAFWORM (Alabama arillacea Hbn.)

Massachusetts

T. H. Jones (The Pawtucket Times, Pawtucket, R. I., September 12): A cloud of moths of an unclassified variety swept down on the City of North Adams, Mass., Monday and remained all day. Snow windows, windshields of automobiles and everything of a like nature were covered. Monday night they swarmed so thickly around the electric arc lamps that the lights almost cast a shadow. Where the moths came from nobody knows. Last year about the same time they made an appearance and remained until the first frost killed them.

- Rhode Island T. H. Jones (September 13): Yesterday afternoon I was rather interested to see moths of the cotton caterpillar in some numbers on the outside of show windows and elsewhere about the streets near the railroad station in Providence. I do not believe they were there on the 11th or I would have noticed them.
- Maryland J. A. Hyslop (September 11): Hundreds of moths are in my melon patch at Avon. Clusters of 8 and 10 on a single melon, working in large gouged-out areas on the fruit extending completely to the seed cavity in some cases; these were probably made by poultry.
- Georgia W. F. Turner (September 5): Find scattered larvae one-half to three-fourths grown and more numerous young larvae in most fields at Shellman. No appreciable injury as yet. (September 16): Many fields stripped around the Valley and Perry. Did not see any signs three weeks ago. This insect came into northern Georgia several weeks before it got to middle Georgia this year.
- B. R. Coad (September 7): The leafworm is reported as having damaged cotton considerably in Tifton County.
- O. I. Snapp (September 7): The cotton worm was prevalent in practically every cotton field on this date in the vicinity of Perry, and was doing considerable damage in some fields. (September 17): A cotton field of about 40 acres was almost completely defoliated by the cotton worm near Fort Valley. This insect is more abundant here this year than usual, and is doing considerable damage.
- Ohio G. A. Runner (September 12): Moths of the cotton leafworm appeared in large numbers at Sandusky and on the Lake Erie Islands during the first week in September. Numerous reports were received of injury to ripened fruit in the Ottawa County peach district.
- H. A. Gossard (September 13): The cotton moth came to the peach districts of northern Ohio in a noteworthy flight September 3, 4, and 5. They settled upon the peach orchards of Catawba Island and along the southern Lake shore, causing considerable anxiety among the peach growers and doing a good many hundred dollars worth of damage. It is said that quite sound, hard peaches were punctured by the moths and that those approaching ripening were badly disfigured. By the end of the third day practically all of the moths had disappeared.
- Indiana J. J. Davis (September 14): The cotton leaf caterpillar moth has been reported injuring peaches as far north as Peru. The injury was especially conspicuous in the southern third of the State. The first reports were received September 6 and are continuing to come in at this date.
- E. A. Porter (September 21): Reports of injury to ripe peaches have been received from many points in Knox and Daviess Counties. The first report was on September 7.

- Illinois W. P. Flint (September 13): The adults of this insect have caused injury by feeding on peaches, grapes, and other fruit throughout the State. Larvae are very abundant on cotton which is being grown in the State, especially in several of the southern counties. The worms did not appear on the cotton plant until about September 4th.
- Kentucky B. R. Coad (September 11): Fulton County has suffered more or less damage from the cotton leafworm the present season, according to information from reliable sources. This is in addition to the counties of which you have been previously advised.
- Tennessee B. R. Coad (September 3): Reliable information shows serious damage has been occasioned by the leafworm in Dyer, Lake, and Madison Counties in west Tennessee. (September 11): Henry and Henderson Counties have suffered more or less damage from the cotton leafworm the present season, according to information from reliable sources.
- Alabama W. E. Hinds (August 28): Cotton worms have been reported recently from more than three-fourths of the counties in this State. We expect a wide spread of stripping especially in the northern two-thirds of the State during the last week of August and the first ten days or two weeks of September. I believe that up to this date over one million pounds of calcium arsenate has been used in this State for cotton worm control. (September 6): The second crop of the cotton leafworms is now reaching the half-grown stage in central and northern Alabama. This pest has been reported as far south as Mobile County but the damage is not as great in the South -- the cotton was too far along.
- B. R. Coad (September 11): Lawrence and Lamar Counties have suffered more or less damage from the cotton leafworm the present season, according to information from reliable sources.
- Mississippi B. R. Coad (September 11): The following counties have suffered more or less damage from the cotton leafworm the present season, according to information from reliable sources:
- | | | |
|------------|----------|-----------|
| Leake | Rankin | Issaquana |
| Scott | Itawamba | Neshoba |
| Lauderdale | Choctaw | Benton |
| Lafayette | | |
- Missouri A. F. Satterthwait (September 7): A large flight was occurring September 2, 3, and 4 at Webster Groves, attracted to lights and to imperfect fruit and sheltering in vegetation generally by day.
- L. Haseman (September 12): For southeastern Missouri the crop of worms of late August matured largely the last week. Moths have been attacking fruit at Columbia since September 1. Some serious damage to fruit. September 12 worms at Columbia were feeding on cotton nearly matured. Some pupa cases reported.



Arkansas B. R. Coad (September 11): The following counties have suffered more or less damage from the cotton leafworm the present season, according to information from reliable sources:

Green	Cross	Jefferson	Saline
Pulaski	Independence	Jackson	Perry
Logan	Sebastian	Nevada	Ouachita
Union			

Oklahoma B. R. Coad (September 12): C. E. Sanborn, Entomologist, Stillwater, under date of September 7, advises that the leafworm has begun to occur fairly generally in the southern part of the State. This is in addition to occurrences previously reported at Frederick, Tillman County, and McAlester, Pittsburg County.

New Mexico R. Middlecrook (August 16): It is too early to estimate damage. Have appeared in enormous numbers. Local arsenical supplies are exhausted and they will probably do much more damage until more arsenicals are obtained. (August 25): No particular damage; may be a benefit, in Mesilla and Pecos Valleys. (September 13): The cotton leafworm arrived so late and did not increase in numbers so that what little harm they did was offset by the advantage gained by the stripping of the leaves which allowed the sun to reach the lower bolls and has caused some premature ripening which in this country is an advantage.

COTTON APHID (Aphis gossypii Glov.)

North Carolina F. Sherman (September 6): I think that our field workers can give testimony that in some fields there has been more of this aphid on the dusted plants.

Georgia W. F. Turner (September 5): In several fields the infestation is so heavy that opening cotton is being covered by honeydew and its consequent sooty mold. In a field of cotton, dusted only twice, the infestation is general. Couldn't find a leaf which didn't bear some aphids. Across the road is another field which was not dusted (planted in a peach orchard). Very few aphids in one end of this field. Further down the road, however, some poison blew across from the dusted field, as evidenced by the severe defoliation of the young peach trees. Here there are more aphids than in the portion which received no dust whatever, but not nearly as many as in the field (across the road) which received the dust directly.

G. A. Malorey (September 12): Aphid infestation is also reported from LaGrange.

COTTON BOLLWORM (Heliothis obsoleta Fab.)

Alabama W. E. Hinds (August 25): The cotton bollworm has been extremely common and the frequent complaints show that it is doing more damage than the boll weevil.



Mississippi Geo. A. Maloney (September 12): The bollworm is reported as damaging crops in the vicinity of Coffeeville and Indianola.

COTTON RED SPIDER (Tetranychus telarius L.)

Georgia Geo. A. Maloney (September 12): The red spider is prevalent in some sections near Statesville.

Alabama W. E. Hinds (August 28): The cotton red spider was reported frequently during July but its appearance has been checked by heavy rains.

COTTON FLEA (Psallus seriatus Reut.)

Texas Bureau of Entomology Monthly News Letter No. 112: For the last two or three years there have been increasing complaints from southern Texas about the damage to cotton by the so-called cotton flea. The insect to which this name is applied is Psallus seriatus. The injury attributed to it is the blasting of the very young squares at the terminal bud of the plant. Some preliminary observations made this season throw strong doubt on whether this insect is responsible for the damage attributed to it. A number of plants caged in such a manner as to exclude the insect developed typical injury. The plants showing the excessive shedding of the very small squares also show an abnormal habit of growth. They become very tall and have few or no lateral branches and practically no fruit. All varietal characteristics are masked by this abnormal growth. This suggests that a large part of the injury charged to the insect may be due to climatic causes.

TOBACCO

RED-LEGGED LOCUST (Melanoplus femur-rubrum DeG.)

Connecticut B. H. Walden (September 14): A field of 3 acres of tobacco with the leaves badly riddled was reported from Rocky Hill. Probably from 40 to 60 per cent injured.

Kentucky A. C. Morgan (August 24): Damage to tobacco very great in scattered crops at Lexington.

RICE

STINK-BUGS (Pentatomidae)

Louisiana J. W. Ingram (August 27): Stink-bugs are now found throughout the section about Crowley on headed rice. They are causing quite a bit of damage by sucking the juice from the young rice grains.

FOREST AND SHADE-TREE INSECTS

MISCELLANEOUS FEEDERS

PERIODICAL CICADA (Tibicina septendecim L.)

BROOD XIV (SEVENTEEN-YEAR CYCLE)

West Virginia W. E. Rumsey: This insect is reported from the following counties:

Berkeley	Hardy
Boone	McDowell
Cabell	Morgan
Grant	Pleasants
Jefferson	Pocahontas
Kanawha	Putman
Lincoln	Roane
Logan	Wayne
Hampshire	Wyoming

AN OYSTER-SHELL SCALE (Leridocarpus sp.)

Illinois W. P. Flint (September 12): It is very abundant and destructive throughout the northern two-thirds of the State, as trees both in the city and country are being killed by this scale.

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

New York C. R. Crosby (August 20): Specimens received from New York and Yonkers.

New Jersey R. B. Lott (September 15): Bagworms are unusually plentiful throughout the State this year, some trees being almost defoliated.

Pennsylvania S. W. Frost (September 12): The evergreen bagworm is exceedingly abundant this summer. It has been found on evergreens, quince, and apple.

Ohio H. A. Gossard (September 13): The basketworm or bagworms have not in previous years been recorded north of a line extending east and west through Columbus, about the center of the State. During this summer several reports have been received north of this line, some as far up as Cleveland. This insect was reported feeding on spruce at Marietta, September 4, and on cedar at Lancaster, August 28.

Twig-Girdler (Quercus cingulatus Say)

Maryland J. A. Hyslop (September 13): The twig-girdler is again heavily pruning persimmon trees and doing slight damage to lindens. Not as serious as last year.

Nebraska M. H. Swenk (September 15): In Richardson County, near Humboldt, injury to elms by the twig-girdler during early September was reported.



BIRCH

BIRCH LEAF-SKELETONIZER (Bucculatrix canadensisella Charb.)

- New Hampshire P. R. Lowry (September 11): Many birches are being skeletonized in Durham. Pupation has just begun. This insect is prevalent over the southern half of the State, but no information has been received as to the conditions in the northern half.
- Massachusetts A. I. Bourne (September 25): In coming across the State a short time ago, I found that in practically all of the northeastern sections, the birches were completely browned as a result of the feeding of these insects. Driving along the roads, I noticed every tree, even isolated trees, here and there in pastures, browned as if scorched by fire. Practically no green tissues were left to the foliage. Much of the same condition prevailed here in the Connecticut Valley, although the injury is not quite as severe as in the northeastern section of the State. It was interesting to note, in the higher levels around Athol, Gardner, etc., in northern Worcester County, that the injury was markedly less than in the lower areas immediately to the east and west. It was also striking that throughout Berkshire County much the same thing held true; the birches in that section, in the region around Pittsfield, Dalton, and Lenox, etc., showed very little evidence of the ravages of the skeletonizer.
- Connecticut W. E. Britton (September 24): Reported as being all over the State. About the same as last year.

CATALPA

CATALPA SPHINX (Ceratomia catalpae Bois.)

- Maryland J. A. Hyslop (September 4): Full grown larvae rapidly defoliating all common catalpa trees on my farm at Annapolis.
- Ohio H. A. Gossard (September 10): Reports of damage by the catalpa sphinx continue to arrive. On August 31 specimens came from Lynchburg, and on September 10 from Barnesville.
- Indiana J. J. Davis (September 14): The catalpa sphinx caterpillar has been common and destructive in the southern two-thirds of the State, more so in the southern third.
- Illinois F. H. Benjamin (August 20): A tree in the City of Decatur, Macon County, practically defoliated. About 40 per cent of the larvae heavily parasitized by braconids.

ELM

EUROPEAN ELM SCALE (Cossyparia spuria Ménézies)

- New Mexico R. Middlebrook (September 15): The European elm scale is spreading in the northern half of this State.



ELM LEAF-BEETLE (Calerucella luteola Muell.)

Washington

A. L. Melander (September 17): The elm leaf-beetle is reported from Chehalis by Frank Dabney, who states that "many of the trees look pretty sick and undoubtedly will die if this pest is not curbed. All the green matter of the leaves is eaten." We knew of the occurrence of this species at Clarkston and about Vancouver, Wash., but this is the first report of it to the north.

PINE

PINE DEFOLIATER (Coloradia pandora Blake)

California

Monthly News Letter, Bureau of Entomology, No. 112: The pine defoliater, Coloradia pandora Blake, was discovered in the Chiquito Basin. The infestation is evidently very light, since no trees could be found that had been noticeably defoliated. The caterpillars were found on the ground under trees, where they had evidently been brought down by the smoke and gases from the control fires. This discovery is interesting, as the species has not before been reported for this locality. On July 14, Mr. Patterson arrived in the Yosemite National Park to study the present forest insect conditions in this Park. Bark-beetle infestations in the yellow pine, sugar pine, and Jeffrey pine have been very slight since the last examinations made in the Park in 1919. The pine defoliater was also found in the Park. Caterpillars were found feeding on the Jeffrey pine in the Little Yosemite and in the Snow Creek Basin. They were found on the yellow pine on the Yosemite Valley floor.

IMPORTED PINE SAWFLY (Diprion simile Hartig)

New York

C. R. Crosby (August 20): Found eating the needles off of long-leaf pine trees in yards— trees 6 years old, at White Plains; 150 to 200 caterpillars on one tree. Dr. Howard says that this is a new record. (Determination made by Mr. Rohwer.)

POPLAR

PACIFIC POPLAR GIRDLER (Agrilus nevadensis Horn)

California

Monthly News Letter, Bureau of Entomology, No. 112: The tops of numerous poplars on an estate near Redwood City, Calif., have been killed by the Pacific flatheaded poplar girdler. The beetles which originally caused the trouble appear to have come from the native black cottonwoods along the banks of the creeks. Cutting out and burning the infested wood was recommended for control.

SPRUCE

SPRUCE BUDWORM (Cacoecia (Harmoloba) fumiferana Clem.)

GENERAL
STATEMENT

T. E. Snyder (September 13): This Bureau has recently investigated serious defoliations by the spruce budworm in northern and central Idaho and in the Yosemite National Park, in the Tower Falls and



Camp Roosevelt sections, Wyo. This destructive insect, which has devastated the spruce and balsam fir forests of Quebec, Ontario, New Brunswick, and Maine, is apparently distributed throughout the western States.

FIR

A BARK-BEETLE (Dryocoetes sp.)

Monthly News Letter, Bureau of Entomology, No. 112: An examination of the dying alpine fir in the Glacier National Park was made during the past month. The trees are being killed by a small bark-beetle, Dryocoetes sp. This attack occurred in the top and each year a lower portion of the bole is attacked. As many as four years are required to kill some of the larger trees. In many cases smaller trees are killed in one year. During the latter part of August a further examination will be made of this damage, with the purpose of recommending control measures of some sort, if possible.

MONTEREY CYPRESS BARK-BEETLE (Phloeosinus currensi Hopk.)

California

Bureau of Entomology News Letter No. 112: At San Francisco a number of fine imported Chamaecyparis and Retinospora were affected with dying twigs, and the nurserymen were afraid that the entire trees would die. The trees are especially valuable at this time because the quarantine regulations now forbid their importation. The cause of the trouble was found to be the Monterey cypress bark-beetle (Phloeosinus currensi Hopk.). The beetles bore into the small twigs, possibly for food, and this caused the twigs to break over and lose color. Usually not much real damage is done, but the trees look badly for awhile.

IPS

California

Monthly News Letter, Bureau of Entomology, No. 112: J. M. Miller reports that last season Ips was discovered on the Arrowhead Lake Project, Calif., and that submergence of the logs in water for several days was not an effective method of killing Ips beetles. This season some experiments are under way at North Fork to determine whether prolonged submergence will result in effective mortality. These tests, which include butylus and longitarsus brevicornis Lec., are being carried out by Mr. Wares. They have not been under way for a month and so far the experimenters have not succeeded in drowning any beetles. The brood of P. longitarsus came out of the water in fine condition after three weeks' submergence. They apparently become dormant while in the water and do not develop, but recover and resume activity within a few hours after they are brought into the air.

TULIP

TULIP SCALE (Toumeyella liriodendri Cmel.)

Indiana J. J. Davis (September 18): Numerous reports of the tulip scale on tulip trees or yellow poplar have been received. The reports have all come from the southern half of the State. Specimens from Terre Haute, received September 11, were hatching. It is apparently a little later than usual this year.

A SCARABAEID (Anomala marginata Fab.)

West Virginia Bureau of Entomology News Letter No. 112: In the vicinity of French Creek, W. Va., many small trees of black walnut, hickory, hazel, and chestnut were partially defoliated during July and August by beetles of Anomala marginata Fab. In some cases, especially on black walnut, the beetles were very abundant and young trees were stripped of their leaves.

BASSWOOD

BASSWOOD APHID (Therioaphis tiliae L.)

Wisconsin A. A. Granovsky (August 17): In Door County some injury was reported.

INSECTS ATTACKING GREENHOUSE

AND ORNAMENTAL PLANTS

MISCELLANEOUS FEEDERS

GARDEN FLEA-HOPPER (Halticus citri Ashm.)

Mississippi R. W. Harned (September 1): These insects were causing serious damage to petunias on property at Steens.

ASTER

BLACK BLISTER BEETLE (Epicauta pennsylvanica DeG.)

Connecticut G. M. Finley (August 26-September 1): One florist at Scuthington said that he hired a boy to pick the beetles off by hand and destroyed about 2,000. Many asters were badly eaten.

Indiana J. J. Davis (September 18): The black blister beetle was first reported this year injuring asters at Indianapolis.

MAGNOLIA

MAGNOLIA SCALE (Neolecanium cornuparvum Thos.)

New York C. R. Crosby (August 7): Badly infested magnolia branches were received from Fredonia.

SPIRAEA

A SPIRAEA APHID (Aphis sp., det. Mason)

New York A. L. Pierstorff (July 14): This is seriously infesting spiraea in Monroe County.

SUNFLOWER

SUNFLOWER PEACOCK FLY (Straussia longinervis Wied.)

New Hampshire P. R. Lowry (August 24): A number of sunflowers had the stalks badly tunneled by this insect at Concord.

LAUREL

Anomala marginata Fab.

Connecticut W. E. Britton (September 24): Larvae identified by Dr. Böving. Material sent by owner, who sent correspondence to me. Attacking grass in lawn at Salisbury.

INSECTS ATTACKING MAN AND DOMESTIC

ANIMALS

MISCELLANEOUS

ROBBER FLY (Saropogon dispar Coq.)

Texas Monthly Letter, U. S. Bureau of Entomology, No. 112: Specimens of a large robber fly, Saropogon dispar Coq., have been sent to Doctor Alldrich by David Hunter of San Antonio, Tex., with the information that they are killing many honeybees in his apiary. "Having weakened the colonies to a considerable extent before the cause was discovered. Over a thousand have been killed by knocking them over with a stick." No such numbers have ever been reported before, although in the literature of robber flies there are records of several species occasionally attacking bees. Saropogon dispar has been found hitherto only in Texas and Oklahoma, and no references to its habits are found in literature.

DEE LOUSE (Braula coeca Nitsch)

Maryland E. F. Phillips (September 30): This species has been repeatedly introduced with imported queen bees and has disappeared when the queens were introduced into full colonies of bees, so that the impression has grown among American beekeepers that the species for some unknown reason can not become established in this country. In 1920 a specimen of this species was sent for identification from Carroll County, Md., Recently it has again been reported and E. L. Sechrist has visited the region. Braula is found in many of the colonies owned by one firm of beekeepers and is also found in other apiaries in the immediate locality. This species was reported as present in Mechanicsburg, Pennsylvania, in May of this year and it was then reported that they had been found four or five miles away a few years ago.

WHEEL BUG (Arilus cristatus L.)

Nebraska M. H. Swenk (September 15): It is interesting to note that during the present summer there have been a number of records of the occurrence of the wheel-bug, Arilus cristatus, in Nebraska.

CHINESE PRAYING MANTIS (Paratenodera sinensis Sauss.)

New Jersey R. B. Iott. Specimens of this insect were taken at Trenton, New Brunswick, and Camden; it was also reported as common throughout the State.

Delaware C. O. Houghton (September, 1923): This species has now become pretty well established in this locality, and individuals are frequently seen. It was introduced by egg masses from southern New Jersey, and forwarded to us by F. L. O'Rourke.

MAN

CHIGGERS (Trombicula tlalzahuatl Murray)

Indiana J. J. Davis (September 15): Chiggers seem to be unusually abundant this year throughout the southern two-thirds of the State. They are not only abundant and annoying in the country but in the city lawns as well.

CATTLE

BLACK BLOW-FLY (Phormia regina Meig.)

Texas O. G. Babcock (September 12): Flies are just beginning to appear, as far as trap records show.

STABLE FLY (Stomoxys calcitrans L.)

General F. C. Bishopp (September 28): This insect has been seriously annoying to live stock in the northern two thirds of the grain belt. In some sections milk cows have been markedly cut in production and flesh, beef stock reduced in condition, and horses seriously annoyed. Some report flies so bad that fall plowing has been interfered with. There is evidence that they have played a part in the dissemination of anthrax in South Dakota.

Nebraska M. H. Swenk (August 31): The stable fly continued more than usually annoying during the month of August.

Texas O. G. Babcock (September 21): The stable fly has been increasing for the past two weeks at Sonora. It is not serious, however.

HORN FLY (Haematobia irritans L.)

General F. C. Bishopp (September 28): This fly has been more abundant than usual this summer in Colorado, Wyoming, and parts of the Dakotas. It is reported that in some sections the condition of grass fed cattle shipped from the range is markedly reduced as a result. Some claim a flesh condition out of 10 per cent.

Texas O. G. Babcock (September 20): For the past 10 days or two weeks the horn flies have been increasing considerably at Sonora with 300 to 300 per animal approximately. The increase has followed the cooler and moist weather.

SCREWORM (Chrysomya macellaria Fab.)

Texas O. G. Babcock (August 22-Sept. 5): Screwworm cases occur in about normal numbers, but are increasing. They are ^{not} as numerous as expected, on account of the weather apparently,

OX WARBLE (Hypoderma lineatum DeVill.)

Texas O. G. Babcock (September 10): Ox warbles are appearing earlier than usual. Damage is very slight at the present time. Cattle in general show infestations.

HORSES

RED-TAIL BOT-FLY (Gastrophilus haemorrhoidalis L.)

General F. C. Bishopp (September 28): This fly has occurred in about the usual abundance this summer in old infested territory, where it is recorded as one of the most troublesome pests of horses. There appears to be a considerable spread of the nose fly in the last several years. Circumstantial evidence strongly indicates that it is now present in northern Colorado and northern Wyoming, several hundred miles southwest of its range in 1913. The simple device consisting of a piece of rectangular belting or leather suspended beneath the lips, from the bit rings, as recommended by the Bureau of Entomology, is coming into general use.

NOSE BOT-FLY (Gastrophilus nasalis L.)

F. C. Bishopp (September 28): Actively attacking horses in northern Colorado, Wyoming and South Dakota and Minnesota. Extremely heavy infestation of eggs on horses in northern Colorado and southern and eastern Wyoming.

HORSE BOT-FLY (Gastrophilus intestinalis DeG.)

F. C. Bishopp (September 28): Active and heavy infestations of eggs on horses in northern Colorado and southern and eastern Wyoming.

POULTRY

EUROPEAN HEN FLEA (Ceratophyllus gallinae Schrank)

Maine P. R. Lowry (August 25): Very heavy infestations of what has been provisionally identified as this flea have been found in several chicken houses in this vicinity (Eliot, Maine).

GOATS

SUCKING GOAT LOUSE (Linognathus stenopsis Burm.)

Texas O. G. Babcock (September 21): Kids untreated last spring are suffering severely from the attacks of this louse.

INSECTS INFESTING HOUSES AND
PREMISES

A POWDER-POST BEETLE (Iyctus sp.)

Nebraska M. H. Swenk (August 31): A case of the serious injury of a barn built of cottonwood lumber, in Buffalo County, by the powder-post beetle came to our attention during the latter part of August.

BOOK LOUSE (Atropos divinatoria Mull.)

New York C. R. Crosby (August 16): At Darien a house is reported as badly infested.

AN ANT (Pogonomyrmex occidentalis Cross.)

Nebraska M. H. Swenk (September 15): In Frontier and Harlan Counties the mound-building prairie ant is reported as a destructive nuisance.

ARGENTINE ANT (Iridomyrmex humilis Mayr.)

Georgia Luther Brown (September 24): The Argentine ant has been reported from Brunswick and Waycross.

Louisiana T. H. Jones (September 4): The Argentine ant has been the cause of considerable complaint by householders in Baton Rouge during the past several days. It is usual for this ant to cause much annoyance about the house at this time of year, especially if the weather is wet.

EUROPEAN EARWIG (Forficula auricularia L.)

California E. O. Essig (September 5): The first report of this earwig in California has reached us, though it is known in Washington and Oregon. Residents of the infested area have known it since 1919. No damage is reported, although the insect is abundant.

FUSE-PLUG BORER (Dermestes frischii Kug.)

Minnesota A. G. Ruggles (September 29): An interesting case of a fuse-plug borer was called to my attention recently. The larvae of a dermestid, Dermestes frischii, was found eating the lead inside of the fuse plugs that connected up the different cables of a telephone company. The injury was not confined to one plug but has been quite general; throughout the State.

INSECTS ATTACKING STORED PRODUCTS

GRANARY WEEVIL (Calandra granaria L.)

- New York C. R. Crosby (August 22): The weevils have practically destroyed my rye and are in my wheat granary.
- Nebraska M. H. Svenk (September 15): Reports of injury to stored grain pests are again becoming more common. These come from southern and eastern Nebraska.

DARK MEALWORM (Tenebrio obscurus Fab.)

- New Hampshire P. R. Lowry (July 25): Adults have been common in houses for the last week. There have been no reports of injury to cereals.
- Wisconsin A. A. Granovsky (August 26): This is a very common insect pest in most of the granaries in Door County. Damage varies considerably, according to amount of infestation.

CADELLE (Tenebroides mauritanicus L.)

- Nebraska M. H. Svenk (September 15): Reports of injury to stored wheat by stored grain pests are again becoming more common. These come from southern and eastern Nebraska.

INDIAN-MEAL MOTH (Plodia interpunctella Hbn.)

- Nebraska M. H. Svenk (September 16): Reports of injury to stored grain pests are again becoming more common. These come from southern and eastern Nebraska.

LARDER BEETLE (Dermestes lardarius L.)

- Wisconsin A. A. Granovsky (August 26): The larder beetle was observed in practically all cheese factories visited, and it has been seen in private homes in Door County. The amount of damage is difficult to estimate.

THE INSECT PEST SURVEY BULLETIN

A periodical review of entomological conditions throughout the United States,
issued on the first of each month from April to November, inclusive

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INSECT PEST SURVEY BULLETIN

Vol. 3

November 1, 1923

No. 8

OUTSTANDING ENTOMOLOGICAL FEATURES IN THE UNITED STATES FOR OCTOBER, 1923

This number of the Insect Pest Survey Bulletin brings Volume 3 of the publication to a close. The season has been one of but moderate insect damage in general.

The Hessian fly seems to be on the increase in Minnesota, Iowa, and North Dakota. General adoption of the late planting of wheat is reported from the greater part of the wheat belt.

Continued rains through the late fall materially reduced the number of chinch bugs which went into hibernation in Illinois and Missouri. The pest is reported as more numerous than usual in Kansas, Minnesota, and Nebraska.

A serious outbreak of the velvet bean caterpillar was observed in Mitchell County, Ga., early this month.

A very unusual outbreak of the lubber grasshopper associated with the white-lined sphinx attacking the cattle range plants in enormous numbers was reported from New Mexico.

The apple and thorn skeletonizer is now known to occur from Washington County to Long Island, and westward to Fulton, Schcharie, Greene, Ulster and Orange Counties in New York State.

The Mexican bean beetle has materially extended its range during the season. Detailed reports of recent spread are contained in this number.

Reports on the cotton leafworm are still being received from a considerable part of the cotton belt, as well as from the more northern States.

Very serious damage was done during the past season to cotton in the Imperial Valley by the cotton leaf perforator.

CEREAL AND FORAGE - CROP INSECTS

MISCELLANEOUS FEEDERS

GRASSHOPPERS (Acridiidae)

- Delaware C. O. Houghton (October 23): Melanoplus femur-rubrum DeG. has appeared in considerable numbers at Newark of late.
- Illinois W. F. Flint: Grasshoppers are not sufficiently abundant in most sections of the State to cause any fear of an outbreak in 1924. In western Illinois, some damage has been done to pastures, but adults are not present in more than the usual numbers.
- Minnesota A. G. Ruggles (September 29): Of first importance among the field insects are the grasshoppers. In three counties of the State we had localized bad outbreaks. In St. Louis and Carlton Counties, the species was Camnula pellucida. In Hennepin County the species was Melanoplus bivittatus. If weather conditions are favorable I am expecting to see a large increase in grasshopper infestations next year in Minnesota.
- Nebraska M. H. Swenk (September 15-30): During the last two weeks in September there were some reports of grasshopper abundance in new wheat fields in Thayer and Lancaster Counties. (October 1-20): During the early part of October grasshoppers were reported doing injury in young wheat fields in York and Kearney Counties, but the injury was not general or particularly severe.

CUTWORMS (Noctuidae)

- Illinois W. F. Flint: Larvae of Prodenia ornithogalli Guen. have been reported from several sections of the State, mostly feeding on alfalfa.

WHEAT

HESSIAN FLY (Phytophaga destructor Say)

- Illinois W. F. Flint: Abundant rains throughout August and September caused a seasonal emergence of the Hessian fly. As previously reported, flies were abundant in southern Illinois, relatively scarce in central Illinois, and present in normal numbers in northern Illinois. Emergence in southern Illinois apparently was nearly over about six days before the computed fly-free date.

- Iowa C. N. Ainslie (October 25): In Monona County volunteer and early-sown wheat is heavily infested. The fly in volunteer wheat has largely pupated although eggs are still to be found on the blades. In young wheat larvae of all sizes are numerous and the outlook is unfavorable for 1924.
- Minnesota A. G. Ruggles (September 29): The Hessian fly seems to be decidedly on the increase. Last year we found it doing considerable damage in one or two counties. This year I have had reports from a number of counties, but no reports on the extent of the damage done. Unfortunately I have had no time to devote to the problem and have been unable so far to work out the fly-free dates. Practically all of the infested counties so far are in the northern part of the State and are in the region where winter wheat is being grown more and more extensively.
- Missouri O. C. McBride (October 6): The adults were somewhat later in emerging this fall than in past years. Most of the farmers and county agents are cooperating with the extension entomologists and seeding after the fly-free date.
- K. C. Sullivan (October 19): I wish to report remarkably close observance of fly-free date and at present the fly situation looks very favorable.
- North Dakota C. N. Ainslie (August 31): Hessian fly is present in every field all over this part of the State (Mandan). I took it in Golden Valley County and today it was found at Dickinson when I stopped there between trains.
- Nebraska M. H. Swenk (September 15-30): At the Hessian fly observation station, established near Plattsmouth, Cass County, after a few days of comparative inactivity, the flies resumed emergence on September 18, bringing on a wave of emergence on September 21, on which date over 2,400 eggs were laid on 100 wheat plants, and nearly 60 per cent of the flaxseeds had given up their flies. Emergence continued steadily, the last wave occurring on the 26th to 29th of September, and then rapidly dropping off. By September 27 less than 10 per cent of the flaxseeds contained larvae or pupae, and on September 30 nearly 96 per cent of the flaxseeds were empty, the pupae in flaxseeds on that date representing only a fraction of 1 per cent of the whole. The fly-free date was announced for October 1 at this locality. (October 1-20): In the portion of southeastern Nebraska where the Hessian fly was most injurious this spring, the farmers mostly awaited the fly-free date before sowing their wheat this fall. In some counties, such as Cass and Richardson, fully 95 per cent of the farmers awaited the announcement of the fly-free date. Examination of the young plants of the new crop shows practically no infestation in such late-sown fields.

WHEAT SHEATH GALL JOINTWORM (Harmolita vaginicola Deane)

Michigan R. H. Pettit (September 21): I received on the 20th inst. samples of the sheath jointworm from John E. Hanson, Elsie, Mich. I am sorry to see this species coming back.

FALSE WIREWORM (Eleodes sp.)

Colorado C. P. Gillette. We commonly have many complaints from the dry farmers in the eastern portion of the State because of injuries to fall grains from the attacks of false wireworms. One of my men has just returned from an inspection trip and reports very little injury. He was able to find an occasional field where appreciable harm was being done. In a single instance he thought 20 per cent of the grain had probably been destroyed.

A PSOCID (Peripsocus sp.)

Nebraska M. H. Swenk (September 15-30): From Box Butte County a report of thousands of the Psocid (Peripsocus sp.) occurring on the racks with which grain was being hauled to the threshing machines during the last week in September was received.

SIX-SPOTTED LEAFHOPPER (Cicadula 6-notata Fau.)

Nebraska M. H. Swenk (October 1-20): During the period covered by this report there have been numerous inquiries concerning the large number of leafhoppers present in the volunteer wheat and the young wheat of the new crop. These reports have come from Dodge, Colfax, Seward, and other counties between October 4 and 15. The species concerned is chiefly Cicadula 6-notata. No serious injury has been noted or reported as a result of the unusual abundance of these insects.

A LEAFHOPPER (Deltoccephalus affinis Gillette and Ball)

Nebraska M. H. Swenk (October 1-20): This insect, associated with an outbreak of Cicadula 6-notata, has been received from Dodge, Colfax, Hall, Seward and other counties between October 4 and 15.

A ROOT APHID (Geolca squamosa Hart.)

Nebraska M. H. Swenk (October 1-20): In Douglas, Dodge, and Colfax Counties there have appeared during October in some of the early-sown fields an abundance of Geolca squamosa. The county agricultural agents of these counties report that some of these fields are being seriously injured by these aphids.

A ROOT APHID (Forda olivacea Rohwer)

Nebraska M. H. Swenk (October 1-20): In Douglas, Dodge, and Colfax Counties there have appeared during October in some of the early-sown fields considerable numbers of wheat root-lice, chiefly Forda olivacea. The county agricultural agents of these counties report that some of these fields are being seriously injured by these aphids.

CORN

CHINCH BUG (Blissus leucopterus Say)

- Illinois W. P. Flint: Continued rains through September have somewhat reduced the number of bugs, and it is now doubtful whether they will be present in hibernating quarters in any greater numbers than in the fall of 1922. Heavy flights of adult chinch bugs to hibernating quarters occurred during the warm days of the first half of October.
- Minnesota A. G. Ruggles (September 29): At Brookpark in Pine County, the chinch bugs seem to have become established again. They did considerable damage this year to crops in that region. We are putting on a community campaign in that area this fall.
- Missouri O. C. McBride (October 6): In a few counties of central and northern Missouri the chinch bugs caused considerable damage. (September 28): Several nymphs in the third instar were noted, and from all indications large numbers of the adults will go into winter quarters in a vigorous condition.
- A. C. Burrill (October 15): The wet weather seems to have held the chinch bug down, from all reports I can gather, except in Andrew, Buchanan, and Caldwell Counties. Personal investigation in the Missouri River Bottom shows no numbers of chinch bugs, although single individuals are present.
- K. C. Sullivan (October 19): Chinch bugs are still plentiful in many sections. At present a vigorous campaign for burning all harboring places is being organized.
- Nebraska M. H. Swenk: A report from Johnson County on September 29 indicated that the chinch bug was present in the cornfields in that locality in abundance on that date.
- Kansas J. W. McColloch (October 22): Bugs have been going into hibernation since early October. Apparently there are more bugs than at this time last year.

CORN EARWORM (Heliothis obsoleta Fab.)

- Delaware C. O. Houghton (October 20): Late sweet corn at Newark is badly infested by this species.
- Illinois W. P. Flint: This insect is less abundant and destructive to corn than usual this season. Late sweet corn shows an infestation of approximately 30 per cent. Field corn is not as heavily infested. This is a remarkable contrast to the infestation of over 90 per cent in the fall of 1921.

Missouri O. C. McBride (October 6): Some of the late corn was heavily infested with the corn earworm but not as heavily as last year.

Kansas J. W. McCulloch (October 22): The corn earworm was not as abundant as normal in eastern Kansas. Approximately 50 per cent of the ears were injured, the grain injury amounting to from 1 to 3 per cent. In western Kansas the injury was much more severe.

CORN LEAF APHID (Aphis maidis Fitch)

Nebraska M. H. Swenk (September 15-30): During the last week in September the corn leaf aphid was reported as injurious to kafir, milo, and the smaller grain sorghums in Phelps County.

WESTERN CORN ROOTWORM (Diabrotica longicornis Say)

Iowa C. N. Ainslie (September 28): Adults of this pest are exceedingly numerous this fall in this vicinity, although little damage to corn has been reported during the past summer. The adults are feeding on dandelions and other late flowers, and are found also in large numbers on young alfalfa plants, on which they feed.

Missouri O. C. McBride (October 6): The western corn rootworm was noted feeding upon the pollen of late-planted corn (September 28) in large numbers. No damage was noted.

ALFALFA AND CLOVER

GARDEN WEBWORM (Loxostege similalis Guen.)

Illinois W. P. Flint. This insect has continued abundant through September and early October, and has badly thinned or entirely killed out many fields of alfalfa which were sown during the latter part of August.

have
J. H. Bigger (October 13): These webworms/destroyed 50 per cent of the crops in a 20-acre field, and are still working.

CLOVER-ROOT CURCULIO (Sitona hispidulus Fab.)

Illinois W. P. Flint. Adults of S. hispidulus are abundant in clover and alfalfa fields, where they are now depositing their eggs. They have caused some damage to newly-sown alfalfa.

PEA APHID (Illinoia pisi Kalt.)

Illinois W. P. Flint : Pea aphids are a little more than normally abundant in red clover and alfalfa throughout central Illinois.

KAFIR AND SORGHUM

SORGHUM WEBWORM (*Celama sorghiella* Riley)

souri O. C. McBride (October 6): The kafir worm that caused considerable damage to kafir corn in southwestern Missouri two years ago appeared again this fall. It is later in appearing than two years ago, but is doing considerable damage in Barry, Jasper, Howard, and Boone Counties. In some localities as high as 50 per cent of the seed crop has been damaged.

sas J. W. McColloch (October 18): Larvae have been reported doing considerable injury in several fields in Franklin County.

VELVET BEAN

VELVET BEAN CATERPILLAR (*Anticarsia gemmatilis* Hbn.)

rgia John B. Gill (October 2): The velvet bean caterpillar appeared in very injurious numbers in Mitchell County, Ga., causing complete defoliation in large fields of velvet beans. Some damage was also noted on kudzu vines, but velvet bean was decidedly the preferred host. According to the farmers of that section, this was the worst infestation that they had ever witnessed.

RANGE PLANTS

WHITE-LINED SPHINX (*Deilephila lineata* Fab.)

Mexico W. E. Emery (September 26): Dr. Baerg and I drove at least 20 miles through this army of caterpillars and they are stripping the foliage from all plants and are ruining the cattle range for the coming winter in Dona Ana County. (Determined by Dr. Heinrich,)

LUBBER GRASSHOPPER (*Brachystola magna* Gir.)

Mexico W. E. Emery (September 26): This insect is very abundant and is found on almost all plantations, together with the white-lined sphinx, *Deilephila lineata*, devastating the cattle range for the coming winter. (Determined by Mr. Caudell,)

F R U I T I N S E C T S

APPLE

APPLE-GRAIN APHID (*Rhopalosiphum prunifoliae* Fitch)

to T. H. Parks (October 20): These aphids were collecting in large numbers on apple foliage and twigs during October. This is the first recurrence of heavy migration to apple since the fall of 1918. They are so numerous as to be annoying to apple pickers.

CORDLING MOTH (*Carpocapsa pomonella* L.)

sachu- A. T. Bourne (October 22): A few straggling larvae of the second
etts

generation of codling moths are still maturing, and are to be found on infested trees, but they have practically all gone into hibernation at this time.

Illinois W. P. Flint: In most of the orchard sections the third brood of codling moth was not of much importance this year. Damage by this brood has been reported in only one commercial orchard.

New Mexico R. L. Middlebrook (October 23): Codling moth caused 15 per cent rejections at packing plants, but as the price of apples is high and rejections are bringing a good price, this is not doing as much financial harm as usual.

APPLE AND THORN SKELETONIZER (Hemerophila pariana Clerck)

Connecticut H. J. Zack: Sprayed trees are comparatively immune from apple leaf-pruner at Deep River and Chester, in Middlesex County. This year the infestations were very noticeable everywhere in home orchards and yards. The infestations are noticeably increasing over those of 1922.

New York P. M. Eastman (August 30): There was a very light infestation in an old neglected orchard at Visscher's Ferry, in Saratoga County.

M. D. Leonard (September 15): B. W. Philbrick reports this insect increasing in abundance at Rhinecliff throughout the month and some orchards entirely defoliated. They are now also making their appearance in orchards that have been sprayed. (October 23): An examination of roadside apple trees on October 16, in company with P. M. Eastman, of the Department of Farms and Markets, Albany, showed a light infestation as far north in Washington County as Granville and West Granville. Granville is practically on the Vermont border and West Granville is less than 10 miles south of Whitehall. This light infestation runs west to Hudson Falls and Glens Falls and southward to Saratoga. At Saratoga the infestation is heavier and, approaching Schenectady, it increased in abundance.

On October 19, in company with Mr. Eastman, it was determined that there was a light infestation of the insect on roadside apple trees and neglected trees from Berne, on the western border of Albany County, southward as far as Cobleskill. The infestation in the southwestern end of Schenectady County, in the vicinity of Delanson and Quaker Street and eastward through Duanesburg, is more severe.

According to information at hand, the present distribution of the apple and thorn skeletonizer in this State would indicate that the insect is present from Orient Point, on Long Island, north

practically to Whitehall, in Washington County. On the east side of the Hudson River Valley it reaches to the borders of Connecticut, Massachusetts, and Vermont. On the west shore of the Hudson it extends westward as far as Saratoga and includes all of Schenectady and Albany Counties as far west as Cobleskill, in Schoharie County and the townships of Jewett and Windham in Greene County. It has not been definitely determined how far west in Ulster and Orange Counties the pest has spread. An examination was made earlier in the season by Mr. Eastman of neglected trees at Johnstown and Gloversville, in Fulton County. Apple leaves were submitted for examination, but it is not certain whether they had been injured by the skeletonizer or not.

On the above dates caterpillars in apparently all stages, as well as pupae and pupa skins, were found, although in most cases the insects were not present at all on the leaves.

For the last week at Albany a few moths have been present on window screens.

E. P. Felt (September 20): At Nassau third-brood caterpillars are full-grown and a moth was found on this date.

APPLE MAGGOT (*Rhagoletis pomonella* Walsh)

Massachusetts A. W. Bourne (October 22): I have under date of October 18, reports from Mr. Farrar from Middlesex County, who says that sweet varieties of apples and Northern Spies have been much damaged by fruit fly or railroad worm injury.

Connecticut W. E. Britton (October 24): This insect was found attacking apple at New Haven, Cheshire, and Berlin. It is present in usual abundance.

APPLE LEATHOPPER (*Empoasca mali* LeB.)

Missouri O. C. McBride (October 6): The past 10 days this pest has appeared in great swarms, causing mottling of the entire foliage of the older orchards (especially those in sod). The fruit in this State is mature, so the damage is relatively small.

SAN JOSE SCALE (*Aspidiotus perniciosus* Comst.)

Missouri O. C. McBride (October 6): The San Jose scale is still taking its toll on the apple crop of Missouri. The fifth brood of young is just appearing in southwestern Missouri. Several orchards in Cooper and Howard Counties are heavily infested, with 25 per cent of the fruit spotted.

PEACH

PEACH BORER (*Aegeria exitiosa* Say)

Georgia O. I. Shapp (October 19): Thousands of pounds of paradichlorobenzene

for the peach borer are now being put out in the Georgia Peach Belt under very favorable weather conditions.

Missouri O. C. McBride (October 6): The small larvae entering the peach trees are more numerous than at any time in the past three years. The first larvae were noted entering the trees September 3. They are now feeding between the outer bark and cambium varying from 3/16 to 9/16 inches in length.

SHOT-HOLE Borer (Scolytus rapulosus Ratz.)

Georgia O. I. Snapp (October 19): Fruit-tree bark-beetles are very abundant this year on account of San Jose scale devitalizing many trees.

SNOWY TREE-CRICKET (Oecanthus niveus DeG.)

California California Weekly News Letter, Vol. 5, No. 19 (September 22): At the request of the Libby, McNeil and Libby Company, T. D. Urbahn and D. F. Milbraith, of the State Department of Agriculture, made an investigation of a large orchard under the control of this company to determine the cause of damage to Philips Cling Peaches. It was found that tree-crickets had appeared in abundance, eating small holes in the ripe fruit. Following closely on the damage caused by the crickets, spores of a brown-rot fungus began to develop, with the result that the fruit quickly showed evidences of decay. About 100 tons of peaches were lost in this single orchard.

PEACH-TWIG MOTH (Anarsia lineatella Zell.)

New York Mrs. A. Tutton (September 4): Peaches on one tree at Ithaca are badly infested.

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Georgia O. I. Snapp (October 19): Numerous reports reaching the laboratory at Fort Valley indicate a materially increased San Jose scale infestation in the northwestern part of the Georgia Peach Belt.

RED SPIDER (Tetranychus viridis Banks)

Georgia J. B. Gill (October 2): A rather heavy infestation of the red spider occurred on peach trees in the Albany, Ga., section. The damage will be of such a serious nature as to cause premature defoliation of some trees. This species is also found commonly on hickory trees, especially Hicoria glabra.

FLUM

FLUM CURCULIO (Conotrachelus nemophar Hbst.)

Georgia O. I. Snapp (October 19): The curculio has entered hibernation

at this point. There was only one generation of this insect here during the past season. Only two adults of a second generation were reared in the insectary.

Illinois J. H. Bigger (October 13): This pest is injuring 6 to 10 per cent of the apples in Calhoun County and 25 to 30 per cent in Macoupin County.

PALE TUSSOCK CATERPILLAR (Halisidota tessellaris Hbn.)

York C. R. Crosby (September 18): Specimens of this pest were received from Wilson. It is very abundant on plums.

A MEALYBUG (Pseudococcus naritimus Ehrh.)

Michigan Eugenia McDaniel (October 9): On August 24 our attention was called to a mealybug working on grapes down in Van Buren County. This mealybug seems to be abundant in only a few vineyards. It collects in the bunches and causes some of the berries to drop before maturity. It also produces honeydew, which is smeared over the bunches and makes them unsightly. One notices they are sticky when handled. It practically puts them out of the basket class. An examination of this mealybug shows it to be the omnivorous Pseudococcus naritimus, a mealybug that is reported as having done damage some years ago to California grapes.

PECAN

PECAN-LEAF CASE-BEARER (Acrobasis nebulosa Riley)

Georgia J. B. Gill (October 2): This pest is very abundant in pecan orchards in and southern Georgia and northern Florida. More spraying is being done for Florida the control of this pest than heretofore, and many growers are obtaining very good results in their spraying operations.

PECAN-NUT CASE-BEARER (Acrobasis hebesella Hulst)

Georgia J. B. Gill (October 2): This species has extended its range of destructiveness in this State during the present season, but as yet its exact spread has not been determined.

PECAN CIGAR CASE-BEARER (Coleophora caryaefoliella Clem.)

Alabama J. B. Gill (October 2): A heavy infestation of this pest is reported from Fowl River, where it has caused serious damage to pecan orchards during early spring.

PECAN SPITTLE-BUG (Clastoptera obtusa Say)

Georgia J. B. Gill (October 2): This pest has been very abundant this fall, occurring generally on both pecan and hickory trees.

PECAN SHUCKWORM (Laspeyresia caryana Fitch)

Georgia J. B. Gill (October 2): The pecan shuckworm is showing up in

sufficient numbers in pecan orchards in southern Georgia to cause an appreciable amount of damage to the crop. It is expected that the late-maturing varieties of pecans will be the worst affected.

PECAN WEEVIL (Balaninus caryae Horn)

Georgia J. B. Gill (October 2): The pecan weevil is reported from pecan orchards in the vicinity of Barnesville. The adults appeared in numbers on bearing pecan trees during the first two weeks in September.

AN APHID (Lachnus sp.)

Georgia O. I. Snapp (October 26): The heaviest infestation of this large aphid ever observed by the reporter was seen at Fort Valley today on Delmas pecan trees. Most of the limbs were entirely covered with the insects.

FALL WEBWORM (Hyphantria cunea Drury)

Georgia J. B. Gill (October 2): The fall webworm is very prevalent in neglected pecan orchards, especially those bordering woodlands.

SOUTHERN GREEN STINK-BUG (Nezara viridula L.)

Georgia J. B. Gill (October 2): For the past three weeks the southern green stink-bug has been occurring in numbers on bearing pecan trees of this section, and some damage to the pecan crop from this case is feared. This stink-bug is now abundant on cowpeas, lima beans, and various species of weeds.

TWIG-GIRDLER (Oncideres cingulatus Say)

Georgia O. I. Snapp (October 10): The hickory twig-girdler, attacking pecan trees in the locality of Marshallville, is more abundant this year than normally.

CITRUS

FIRE ANT (Solenopsis geminata Fab.)

Texas T. C. Barber (October 21): Many complaints are heard of ant injury on young citrus trees. The damage consists of gnawing into the tender leaf tips and also in many places through crevices in the bark. The injury starts the gum candying, which appears to be the object of the attack. Possibly a great deal of the damage is due to "gummosis" first attracting the ants, which gnaw into the tree in search of further food supplies.

TRUCK - CROP INSECTS

MISCELLANEOUS FEEDERS

BLACK BLISTER BEETLE (Epicauta pennsylvanica DeG.)

New York W. D. Mills (August 30): Specimens of this insect were received and reported as attacking garden produce from Mineola.

POTATO

POTATO APHID (Macrosiphum solanifolii Ashm.)

Maine E. M. Patch (September 15): This pest is abundant this year at Presque Isle. Fall migrants are in swarms.

GREEN PEACH APHID (Myzus persicae Sulz.)

Maine E. M. Patch (September 15): This pest is more abundant than previously known to me in this State.

POTATO STALK-BORER (Trichobaris trinotata Say)

Illinois C. C. Compton (October 1): The potato stalk-weevil has caused a loss of from 15 to 25 per cent to several growers of eggplants near Des Plaines. A number of plants were killed or are not bearing fruit.

SPOTTED BEET WEBWORM (Hymenia perspectalis Hbn.)

Florida F. H. Chittenden (October 1): This pest is injurious to Irish potatoes at Lynn Haven.

TOMATO FRUITWORM (Heliothis obsoleta Fab.)

Georgia O. I. Snapp (October 10): The tomato fruitworm has been doing considerable damage to green and ripe tomatoes in this locality.

CABBAGE

IMPORTED CABBAGEWORM (Pontia rapae L.)

Georgia O. I. Snapp (October 10): Larvae of the cabbageworm had completely defoliated a patch of collards at Marshallville on this date.

HARLEQUIN CABBAGE BUG (Murgantia histrionica Hahn)

Missouri O. C. McBride (October 6): The Harlequin cabbage bug has been reported doing damage over several widely distributed districts of Missouri. In some places it is practically destroying the late cabbage crop.

STRAWBERRY

STRAWBERRY CROWN-BORER (Tyloclonus fragariae Riley)

Missouri O. C. McBride (October 6): The infested area is gradually increasing. In a 2-acre field in McDonald County and a 1-acre field in Cooper County two-thirds of the plants were killed by August 25.

MURKY GROUND BEETLE (Harpalus caliginosus Fab.)

Delaware C. O. Houghton (October): This species, which sometimes does

considerable injury to strawberries in this State, has appeared only in small numbers this fall. During October it is usually very common on ragweed in the fields, but I have observed but few specimens this month.

BEANS

MELON APHID (Aphis gossypii Glov.)

Delaware C. O. Houghton (October 22): This species has appeared in large numbers recently at Newark on late lima beans.

BEAN APHID (Aphis rumicis L.)

California R. E. Campbell (October 1): This aphid attacked a considerable acreage of lima beans along the coast below Ventura in August. The infestation not only was more general than usual but remained longer. It occurred at the time of blossoming and materially reduced pod setting.

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

GENERAL DISTRIBUTION Neale F. Howard (October 22): The Mexican bean beetle is now known to be established as far east as a line extending from Ashe, through Burke and Lincoln, to Gaston County, N. C., thence from Cherokee County to Abbeville County, S. C., and as far south as Sumter County, Ga., with the exception of the localized outbreak in Thomas County. The pest was also reported from Chillicothe in Ohio.

Georgia J. B. Gill (October 2): The Mexican bean beetle has been reported from Lamar County by the county agent, who submitted three adult specimens with the report.

Ohio T. H. Parks (October 20): These beetles and larvae were sent in by the county agent of Adams County with the statement that they were doing damage to beans in that county along the Ohio River. This is the first report received of damage from this insect in this State.

Mississippi Neale F. Howard (September 29): Prof. R. W. Harned reports that the State Plant Board of Mississippi has scouted practically every county in the State but has not found the Mexican bean beetle outside of Itawamba and Tishomingo Counties in the northeastern portion of the State. These counties have been previously reported.

New Mexico R. L. Middlebrook (October 23): Crops in southern counties of New Mexico are very slightly, if at all, damaged by the beetle. Deming district, Luna County, had a good yield of "pinks", and no appreciable damage was done by the beetle. Dona Ana County had a fair yield of "pintos", no appreciable damage being done by the beetle. The only large brood was the last brood, which hatched too late to be of any particular harm.

Mexico E. G. Smyth: A survey was made today of bean fields in the foothills, and in valleys and depressions among the foothills, at the edge of the high prairie west of Tacubaya, D. F., and extending from there southward almost to San Angel, D. F.,. Comparatively few fields were encountered, and in practically all of these the beans were grown among corn. E. corrupta was comparatively scarce in all of the fields observed. In no field did the infestation exceed 2 to 3 per cent of the plants, and in some of them no infestation could be found. A series of larvae, and a few egg masses, were collected for confinement to rear possible parasites.

BEAN LEAF-ROLLER (Eudamus proteus L.)

Georgia J. B. Gill (October 2): The bean leaf-roller is causing serious damage to snap beans at Thomasville.

CUCUMBER

STRIPED CUCUMBER-BEETLE (Diabrotica vittata Fab.)

Maine E.M. Patch (September 25): This insect has been terrifically abundant in the vicinity of Orono this season. Great numbers in the spring and the fall crop of adults are thick under the drying leaves of the vines and under nearby leaves at this date.

SQUASH

SQUASH BUG (Anasa tristis DeG.)

New York R. Q. Smith (September 11): Infested squash leaves were received from Walton.

C. R. Crosby (September 19): A correspondent from Philmont reports that this pest has killed all his squash and pumpkin vines, both last season and this.

MELON CATERPILLAR (Diaphania hyalinata L.)

New York C. R. Crosby (September 12): Infested squashes were received from Cortland.

BEETS

SUGAR-BEET WEBWORM (Loxostege sticticalis L.)

New Mexico F. H. Chittenden (October 1): J. R. Douglass, of the Truck-Crop Insect Investigations, reported the sugar-beet webworm at Estancia this year. Without looking up all the records, I think this is unusually far south for the distribution of this species.

SOUTHERN BEET WEBWORM (Pachyzancla bipunctalis Fab.)

Virginia F. H. Chittenden (October 1): The southern beet webworm was very

destructive to Swiss chard in one locality in this State that was reported destroying the entire crop, and there is little doubt that Hymenia fassialis, Hymenia morspicalis, and Tachyzancla biruncialis, with the exception of the sugar-beet webworm, are very frequently confused with the garden webworm.

HAWAIIAN BEET WEBWORM (Hymenia fassialis Cram.)

North Carolina F. H. Chittenden (October 1): The Hawaiian beet webworm has been troublesome in this State.

PEPPER

PEPPER WEEVIL (Anthonomus eugenii Cano)

New Mexico

W. E. Emery (September 12): This insect attacked the Chili pepper crop in Dona Ana County last year, doing at least 50 per cent damage to the fruits. There are none noticeable this year, for some unknown reason.

SOUTHERN FIELD - CROP INSECTS

COTTON

BOLL VEEVIL (Anthonomus grandis Boh.)

Louisiana T. H. Jones (The Times-Picayune, Saturday, August 25): Efforts of A. Abshire, a farmer in Vermilion Parish, southeast of Estherwood, to check the ravages of insect pests in his cotton fields this week resulted in the death of one of his horses and the serious illness of Mr. Abshire from inhaling the Paris green and lime mixture which the farmers were scattering among the cotton plants. Mr. Abshire drove along the rows of cotton scattering the poison dust and accidentally inhaled a quantity of poison. Several other farmers are reported to have become ill through inhaling the poison mixture that they scattered to kill insect pests.

COTTON LEAFWORM (Alabama argillacea Hbn.)

Massachusetts A. I. Bourne (September 28): On the 24th of September a flight of these moths was reported from the town of Webster. Apparently they were present there in swarms, which is characteristic of the species. Under date of September 25 I received specimens of these moths from North Adams, with the record that "clouds of them settled on the streets a week or two ago," which would indicate the period from the 10th to the 14th. Personally I collected several specimens of these and saw many others in Pittsfield on September 22. Therefore, we have from several different points in the State records of a northward flight of these moths on approximately the above dates.

Connecticut W. E. Britton (October 24): Moderate numbers of moths were observed on store windows on September 12 and 13. They are more abundant than in an average year.

New York C. R. Crosby (September 17): Moths were found at Ithaca on the passage way between Stone and Roberts Halls about 11 p.m.

Virginia W. J. Schoene (September 28): All cotton in some fields was nearly completely defoliated, but most of the fields noted were only partially defoliated. A very few caterpillars have matured and pupated. This is the third season in succession this pest has occurred in this State in large numbers.

Illinois F. C. Bishopp (October 1): Moths of this species were observed in considerable numbers on windows and about fruit stands.

W. P. Flint: Adults of this insect are still being sent in from southern and central Illinois. It has persisted in the State for a longer period than usual this year.

Michigan

R. H. Pettit (September 21): I took my information from one of the inspectors employed by the State to supervise the standardized packing of fruit under the new Braman law. I asked him particular when it first came and he gave me the date as the first of September. He also showed me a peach which had been attacked and described the work, which appears to be absolutely typical. We received from the Gladwin Construction Company a number of samples that are undoubtedly this insect. Our experience up here in the past has been that they disappear after a heavy frost.

Iowa

C. N. Ainslie (September 30): An unusual flight of adults was observed in certain parts of the territory in and about Sioux City. The moths invade porches and attract attention by reason of their numbers.

Arkansas
and
Georgia

John B. Gill (October 2): The cotton leafworm was in epidemic form in some sections of southern Georgia by the middle of August, and owing to the lateness of the cotton crop some serious damage was done by the caterpillars. The worst infestation coming under my observation was in Mitchell County, Ga. We have received a report from Hope, Ark., stating that the cotton leafworm was very destructive in that section. In a pecan orchard which had been planted in cotton so many of these caterpillars pupated in leaves on the lower limbs as to cause the limbs to bend to the ground.

Missouri

O. C. McBride (October 6): The third brood of the cotton armyworm reached its height about September 28 in southeastern Missouri, stripping the entire foliage from the cotton plant and feeding on the immature bolls. However, they were so late that the lower production bolls were mature and the damage to the cotton crop was comparatively small. The migrating adults have been reported in large numbers for Jasper and DeKalb Counties.

Kansas

J. W. McColloch (October 10): The moths were reported especially numerous in beds of everbearing strawberries. In some cases one-half of the crop was ruined.

Texas

Geo. A. Maloney (October 2): This insect is reported from 38 counties in this State.

M. C. Tanquary (October 17): The cotton leafworm has stripped practically 100 per cent of the cotton in this portion of the State. In riding on the train from San Antonio to College Station on October 1 every field of cotton noticed from the car windows was almost entirely defoliated. Unless the foliage comes out again on these plants the work of the leafworm should cut down enormously the number of boll weevils going into hibernation.

T. C. Barber (October 21): Late cotton fields, which have been held in the expectation of a top crop, have recently been very heavily attacked by a late brood of the cotton worm, and are rapidly being completely defoliated. Considerable numbers of adult moths have also been flying to lights during the past few days.

F. C. Bishopp (October 23): Practically all fields in northern Texas from Dallas to Denison were stripped of foliage. Practically no poisoning was done for the insects, owing to the fact that the crop had made about all that it would owing to dry weather and the work of the boll weevil in the lowlands. Observations made from the train between Fort Worth and Clarendon, Tex., indicated that the leafworm was not present, at least to any great extent, except in the vicinity of Ft. Worth.

COTTON LEAF PERFORATOR (Bucculatrix thurberiella Busck)

California O. A. Pratt (September 19): The insect Bucculatrix thurberiella, which has caused considerable damage to the foliage of cotton in the Imperial Valley this season, has probably been present as a minor pest since the beginning of the cotton industry in this valley. Since 1917 the insect has been found present in every cotton field inspected in the valley (Imperial, in California and Mexico), but where a serious damage was noted, other troubles were also present, such as weeds and grub infestation and poor irrigation. In 1923 a serious outbreak of the insect occurred. The farmers were very much alarmed, as the cotton plants looked as if they were dying and the infestation was pretty general throughout the valley, though many acreages showed no appreciable damage. The farmers were advised to water heavily so as to keep the plants in an active growing condition. It is impossible to estimate the amount of damage done this season but it was greatest and amounted to an almost total loss of the crop where the farmers failed to apply water at the crucial period.

TOBACCO

TOBACCO HORNWORM (Protoparce sexta Joh.)

Missouri K. C. Sullivan (October 18): This species is very plentiful in the counties along the Missouri River.

FOREST AND SHADE - TREE INSECTS

MISCELLANEOUS FEEDERS

PERIODICAL CICADA (Tibicina septendecim L.)

Massachusetts Don D. Lacroix (September 28): In driving through the infested territories south and east of the Cane Cut Canal, on July 11, I found that by far the greatest damage done by this brood of T. septendecim L. occurs in the eastern part of the town of Falmouth, around the village of Waquoit. Here the insect has deposited its eggs in practically every suitable plant, including ferns, false indigo, and goldenrod. Almost every oak from 1 to 20 feet high has dead and dying twigs in abundance. In several cases I saw oaks 12 feet high and 3 or 4 inches through at the base with foliage entirely brown, and much of the youngest growth already drooping. Another point of interest which I noted was the finding in several instances of Calosoma beetles, Sycophanta sp., preying on adult cicadas.

New York M. D. Leonard (October 15): We are digging up very unusual number of cicadas at Blauvelt. About 15 or 20 were taken from a single square foot of space.

WHITE-MARKED TUSSOCK MOTH (Herpocampa leucostigma S. & A.)

New York R. E. Horsay (September, 1923): The egg masses of this pest are reported well scattered around the city of Rochester, and while there was little damage this year and the egg masses are nowhere abundant we are apprehensive for next year.

Ohio E. W. Mendenhall (October 12): I find a good many tussock moths in the shade trees on the streets and parks in Sidney. I find them particularly on the elms. We find now the cocoons on the trunks of the trees.

Illinois C. C. Compton (October 5): Egg masses of the white-marked tussock moth are more numerous than usual at Evanston, Ill.

FALL WEBWORM (Hyphantria cunea Drury)

New York B. W. Philbrick (September 14): This pest has only appeared for the past few days and attacks elm, while some were found on elder.

R. E. Horsey: On a trip to Cayuga Lake a number of webs were noted along the roads, but no serious damage.

FOREST TENT CATERPILLAR (Malacosoma disstria Hbn.)

Connecticut C. D. Clark (October 9): Reported from Fairfield on this date. Egg clusters are very abundant compared with an average year.

BAGWORM (Thyridopteryx ophemeroformis Haw.)

New York M. D. Leonard: Upper Manhattan is especially badly infested, but many trees in this whole section are reported as having considerable numbers of bagworms. (October): "Bags" very abundant and many trees in the city streets of these towns (New Brighton and St. George Staten Island) are having apparently considerable defoliation earlier in the season.

Nebraska M. H. Swenk (September 15-30): Some complaints of the bagworm in Richardson County were received during the latter half of the month of September.

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

Ohio E. W. Mendenhall (September 29): The oyster-shell scale is common on Carolina poplars in the western part of the State.

PALE TUSSOCK MOTH (Malisidota tessellaris Hbn.)

New York R. E. Horsey (September, 1923): This is still being reported, and live insects were found and trees sprayed at Central Park, a street with a strip of grass and plane trees in the center; several trees

here were almost denuded of foliage. The arsenate of lead spraying is very effective for this; the few trees sprayed last year were the least infested. The peculiar phrase about this insect with us is that we have found it only on plane trees. In Highland Park, where basswoods, crab apples, maples, and elms are nearby and touching the plane trees, they are found almost entirely on the plane trees, which are badly eaten. It seems strange that this is reported as a general feeder. The weather this summer is exceptionally cool and as a rule insect pests are much less noticeable than usual.

TWIG GIRDLER (Oncideres cingulata Say)

- Nebraska M. H. Swenk (October 1-20): Some injury to elm twigs by the twig girdler in Richardson County was reported.
- Missouri K. C. Sullivan (October 19): This species is very bad this year at Kansas City. Ground under trees is covered with twigs.

ARBORVITAE

ARBORVITAE LEAF-MINER (Argyresthia thuiella Pack.)

- Maine H. B. Pierson (July 25): This insect is prevalent along the Maine Coast as far north as Mt. Desert Island.

BIRCH

BIRCH LEAF SKELETONIZER (Bucculatrix canadensisella Chamb.)

- Maine H. B. Pierson (June 25): This species has been reported from Mt. Desert Island attacking white birch.
- New York and Vermont M. D. Leonard (September 25): This species is reported by W. J. Cowee of Berlin, New York, as exceedingly abundant, and leaves as badly affected; also in Dorset, Vt., in Little Hoosick Valley.
- R. E. Horsey (September): This pest is very prevalent on red birches at Rochester, and I suppose on many others; it is fully as abundant as last year. We have never sprayed for this.

Aphis betulaecolens Fitch

- Connecticut W. E. Britton (October 24): Swarms of these aphids occurred in the streets of New Haven from September 18 to 25, and were the cause of many inquiries and newspaper comments. They were also present in some other Connecticut cities.

BRONZE BIRCH BORER (Agilus anxius Gory)

- New York R. E. Horsey (September): We continue to remove birches injured and killed by this insect.

BOXELDER

BOXELDER PLANT-BUG (Leptocoris trivittatus Say)

Minnesota A. G. Ruggles (September 29): A number of reports have been sent in concerning the boxelder plant-bug. These forms were not noticed during the season, but toward fall they began trying to get into the houses and it was only then that we heard from them.

CAMPHOR

CAMPHOR THRIPS (Cryptothrips floridensis Watson)

Georgia John B. Gill (October 2): The camphor thrips is attacking large and small camphor trees within the city limits of Thomasville, Ga. On some trees the infestation is so severe that the insects are killing the bark on large limbs and are causing considerable defoliation.

CATALPA

CATALPA MIDGE (Cecidomyia catalpae Comst.)

Ohio E. W. Mendenhall (October 16): The injury was pronounced on catalpa stock in the nurseries in Miami County this last summer, dead tips being due to midge larvae working in buds and tender wood. One nursery I have in mind in the county had 75 to 80 per cent of the trees injured.

CATALPA SPHINX (Geratomia catalpae Boisd.)

Illinois W. P. Flint: Catalpa sphinx was very abundant throughout southern and central Illinois, completely defoliating many small plantations and individual trees in towns and cities.

ELM

ELM LEAF-BEETLE (Galerucella luteola Muell.)

Maine H. B. Pierson (July 10): The elm leaf-beetle is each year apparently spreading farther north, and this year was very abundant in August.

New York R. E. Horsey (September): No new infestation was reported this month at Rochester.

HICKORY

WALNUT DATANA (Datana integerrima G. & R.)

Connecticut W. J. Zack (September): At Chester serious infestations have been noticed on trees growing alone, and in woodlands mainly on the side facing clearing.

LARCH

LARCH CASE-BEARER (Coleophora laricella Hbn.)

Maine

H. B. Pierson (August 20): This insect which assumed serious proportions last year has for some reason not been abundant this year, although it has been reported as working to some degree in localities scattered throughout practically all of northern and eastern Maine.

LARCH SAWFLY (Nematus erichsonii Hartig)

Maine

H. B. Pierson (August 15): The larch sawfly is becoming abundant wherever larch is again becoming prevalent. The worst localities appear to be in northern Aroostook and Washington Counties. (September 3): It is reported from Piscataquis, Penobscot, and Washington Counties as more abundant than in an average year.

MAPLE

MAPLE CHAITOPHORUS (Periphyllus lyropicta Kies.)

New York

M. D. Leonard (August 21): Scattering infestation is reported on a number of the city trees.

OAK

OBSCURE SCALE (Chrysomphalus obscurus Comst.)

Ohio

E. W. Mendenhall (October 23): This species is reported from Sidney, attacking English oak.

Heterocampa mantee Doubt

North Dakota

R. L. Webster (October 17): Considerable damage has been done to the tops of oak trees along Mouse River in September.

TWO-LINED CHESTNUT BORER (Agrilus bilineatus Weber)

Minnesota

A. G. Ruggles (September 29): The two-lined chestnut borer seems to have done more damage than usual, a great many oaks having been killed this past season.

PINE

WHITE PINE APHID (Lachnus strobi Fitch)

Maine

H. B. Pierson (September 28): Considerable damage was done to individual trees in a large stand of mature white pine at Old Town, Me.

PINE BARK-LOUSE (Chermes pinicorticis Fitch)

- New York R. E. Horsey (September): A considerable infestation on white pines at Highland Park is to be found at present.
- Delaware C. O. Houghton (October 10): This species is fairly common on pine in northern Delaware. We have received no specimens from the southern part of the State.

PINE-LEAF SCALE (Chionaspis pinifoliae Fitch)

- Nebraska M. H. Swenk (October 1-20): Complaints of injury by the pine-leaf scale continued to reach us during the period covered by this report.

PALES WEEVIL (Hylobius pales Herbst)

- Maine H. B. Pierson (October 2): This insect is very prevalent throughout southern Maine wherever logging of white pine is going on. Alfred seems to be quite a center.

WHITE PINE WEEVIL (Pissodes strobi Peck)

- Maine H. B. Pierson: The work of this insect has been found throughout northern Maine, even in isolated clumps or isolated individual pine in the spruce region.

PINE TUBE-MOTH (Eulia pinatubana Kearf.)

- Maine H. B. Pierson (August 20): This insect was reported from Indian Purchase in the vicinity of Millinocket.

EUROPEAN PINE-SHOOT MOTH (Evetria buoliana Schiff.)

- New York M. D. Leonard (August 28): A number of four-year-old trees were badly infested. Buds contained young caterpillars.

MOUND-BUILDING ANTS (Formica exsectoides Forel)

- Maine H. B. Pierson: These ants have been very active in the vicinity of Augusta and Waterville and have done considerable damage to white pine. Experiments have been tried with an arsenical gas to exterminate them but were unsuccessful. On the other hand carbon bisulphid proved very efficient.

EUROPEAN PINE SAWFLY (Pristiphora similis Hartig)

- Connecticut H. J. Zack (September-October): We have found infestations on trees in our nurseries and in ornamental plantings. This pest is controlled by arsenical spray and hand picking.

New York

M. D. Leonard (August 25): Mrs. O. J. Spahn reports that a small tree about 4 feet high at Pleasantville contained hundreds of the larvae and the needles were stripped off, also that many larger pines were heavily infested. (August 30): A spray of pine twigs was received bearing numerous full-grown larvae and several pupa cases.

R. E. Horsey (September): A few larvae were found on white pine, September 6, at Highland Park. Except for a bad outbreak in August, 1918, which was promptly controlled by arsenate of lead spraying, we have had no trouble with this, a few only being found each year since.

Bureau of Entomology Monthly Letter, No. 113: Dr. H. E. Burke reports considerable damage to the native forest of Monterey pine at Pacific Grove, Calif., by a defoliating sawfly. S. A. Rohwer has determined the sawfly as Itycorsia brunnicans Nort., stating that the species has not been reared and that practically nothing is known of its habits. Further study by Doctor Burke has yielded the eggs of the species, the habits of the young larvae, and the fact that nicotine dust promises to be more effective in control than lead arsenate.

FIR

FIR SAWFLY (Lophyrus abietis Harr.)

Maine

H. B. Pierson (July 15): This insect defoliated a considerable amount of fir in Whitneyville and was prevalent on the islands off the Maine Coast.

HEMLOCK

FLAT-HEADED HEMLOCK BORER (Melanophila fulvoguttata Harr.)

New York

M. D. Leonard (August 25): Bark was reported infested with grubs at Upper Saranac, Franklin County, with a statement that many fine old hemlocks were found infested upon being felled.

POPLAR

TENT CATERPILLAR (Malacosoma americana Fab.)

Maine

H. B. Pierson (July): The tent caterpillar assumed alarming proportions in several sections of the State, and it is safe to state that probably at least 60,000 acres of poplar and white birch were stripped. As several areas were stripped this year, there is a danger of large areas being killed, owing to repeated defoliations. The worst areas are in the vicinity of Stacyville, Eagle Lake, Fort Kent, Mt. Chase, Masardis, and Moro Plantation. (October 3): One area in which the eggs and pupae were heavily parasitized last year proved to be even more heavily infested this year. Somerset, Piscataquis, Penobscot, and Aroostook Counties are reported infested by this insect. It is found in greater abundance than in an average year.

North Dakota C. N. Ainslie (October 8): Large areas of poplar groves in the Turtle Mts., Bottineau County, have been entirely defoliated by this insect. Vast numbers of eggs have been deposited on the upper branches of the infested trees. The stripped ~~leaves~~ leaves leaved out again, but were much injured by the attack.

COTTONWOOD LEAF-BEETLE (Melasma scripta Fab.)

North Dakota C. N. Ainslie (October 1): A grove of young cottonwoods on the Experiment Station at Dickinson was attacked by this pest during the present summer and severely injured by the larvae, which were present in large numbers. As late as September 1 the injury was still in progress.

SPRUCE

SPRUCE GALL APHID (Chermes abietis L.)

Maine H. B. Pierson (September 25): This insect is reported from Old Town, where it is attacking spruce.

SPRUCE BUDWORM (Cacoecia fumiferana Clem.)

Maine H. B. Pierson (July 25): The budworm is still active in several parts of the State, the outbreak investigated being in northern Aroostook County and the Rangeley Lake District.

Wisconsin S. B. Fracker (October 11): A survey by Dr. Hubert of the Forest Products Laboratory shows some budworm work, but it is much less serious in Wisconsin than in Minnesota, which he also visited.

WILLOW

AN APHID (Melanoxantherium sp.)

Connecticut W. E. Britton (October 24): This species is very abundant on certain willows and crawling over buildings close by. Honeydew is abundant and the place is swarming with honeybees, hornets and flies, at New Haven, Danielson, and Branford.

I N S E C T S A T T A C K I N G G R E E N H O U S E

A N D O R N A M E N T A L P L A N T S

ASTERS

BUMBLE FLOWER BEETLE (Euphoria inda L.)

New York C. R. Crosby (September 19): This insect is reported from Yonkers as causing some damage to aster fields.

LOCUST BORER (*Locusta robiniae* Först.)

W York C. R. Crosby (September 19): The locust borer is reported from Yonkers as causing some damage to aster fields.

CHRYSANTHEMUM

A MITE (*Tarsonemus pallidus* Banks)

W York C. R. Crosby (September 18): Badly infested plants were received from Bull's Head, Staten Island.

CHRYSANTHEMUM LEAF-TYER (*Phlyctaenia rubiculis* Guen.)

Illinois C. C. Compton (October 5): The chrysanthemum leaf-tyer is slightly more numerous in the Chicago district than it usually is at this time of the year.

LILAC

LILAC BORER (*Podocesia syringae* Harr.)

W York R. E. Horsey (September): Considerable damage has been done in our lilac collection as usual this year. We force carbon disulphid into the holes, stopping them with grafting wax. We also have all plants on their own roots, as then new sprouts will spring up to take the place of any destroyed by borers.

LILIES

AN APHID (*Macrosiphum lillii* Monell)

W York M. D. Leonard (August 12): Specimens received from Roy Latham, Orient, Long Island, with statement that many plants have been killed by the attack of this aphid.

MAGNOLIA

TULIP SCALE (*Toumeyella liriiodendri* Gmel.)

W York M. D. Leonard (September 14): A tree was reported badly infested by this insect at Pawling, N. Y.

ROSE

ROSE SAWFLY (*Caliroa aethiops* Fab.)

braska M. H. Swenk (October 1-20): Late injury by the rose slug was reported from Cedar County.

GREEN JUNE BEETLE (*Cotinis nitida* L.)

C. and Maryland F. H. Chittenden (October 1): The larvae of the green June beetle and the green June beetle itself are as abundant this year in the District of Columbia as last, in spite of the activities of birds

together with a report that the species is very injurious to lawns in areas here and there, as is usually reported.

INSECTS AFFECTING MAN

AND DOMESTIC ANIMALS

MAN

FLEAS (Siphonaptera)

- Texas F. C. Bishopp (October 23): During the last few weeks there has been a material increase in the number of complaints of house and yard infestation due to Ctenocephalus canis and C. felis Bouche at Dallas.
- California T. D. Urbahn (October 13): This season has been one with unusually abundant infestations of fleas (Ctenocephalus canis Bouche) on cats and dogs as well as in houses and business houses, where they caused much annoyance to humans. The moderate summer weather may have been an influencing factor in their increase.

YELLOW FEVER MOSQUITO (Aedes aegypti L.)

- GENERAL F. C. Bishopp (October 25): Yellow fever mosquitoes have not been as abundant as usual in the vicinity of Dallas this fall. Dengue fever has not gained any momentum in the South this year. According to the Public Health reports, the disease did not occur in Florida or Georgia and very few cases were reported in Alabama, Mississippi, and Arkansas. Reports covering the five weeks' period ending October 5 show Texas to have had 97 cases and Louisiana 142.

SPOTTED-FEVER TICK (Dermacentor venustus Banks)

- GENERAL F. C. Bishopp (October 25): The few reports received from Colorado and Wyoming indicate that the spotted-fever tick was less numerous in that region this summer than usual. W. B. Sheppard writes that this tick ceased troubling by July 10, whereas last year it was in evidence until September 17.

PUSS CATERPILLAR (Megalopyge opercularis S. & A.)

- Texas F. C. Bishopp (October, 1923): Not a single report of the stinging of man by this species has come to our attention this year. Caterpillars are extremely rare.

ARGENTINE ANT (Iridomyrmex humilis Mayr)

- Texas F. C. Bishopp (October 25): A survey of the districts in Dallas infested with this ant, as made by G. E. Riley and T. J. Wilson, showed that there has been an increase in the area of about 58 blocks, making the total area now infested about 175 blocks.

CATTLE

STABLE FLY (Stomoxys calcitrans L.)

GENERAL F. C. Bishopp (October 11): Cursory observations in central Ohio, Indiana, and Illinois indicate that this fly is sufficiently numerous to cause dairy cattle considerable annoyance.

New York F. C. Bishopp (October 6): The activity of this insect is practically nil on account of cool weather.

Nebraska Breeders' Gazette, by A. E. de Riegles, October 18: "In Nebraska we have had a season so constant as to spoil much hay, and create a pest of flies that reduced at least 100 pounds in flesh from the average weight of all the cattle that were being fattened on grass. For months one could see the cattle in 'wads' in the corners of pastures, fighting flies all day long. It was a serious thing indeed."

HORN FLY (Haematobia irritans L.)

New York F. C. Bishopp (October 6): Horn flies are comparatively scarce on dairy cattle in the vicinity of Syracuse. They are said to have declined rapidly in number in the last two weeks.

Texas F. C. Bishopp and H. M. Brundrett (October 23): Horn flies have been reduced by cool weather to an average of about 75 per animal in this locality (Dallas). About the first of the month they were very annoying to dairy stock, and some report reduction of milk flow.

HORSE BOT-FLY (Gastrophilus intestinalis DeG.)

Illinois F. C. Bishopp and C. C. Compton (October 1): A few adults of this species are ovipositing on horses in the locality of Elgin. While all animals are infested, the number of eggs present is comparatively small.

NOSE FLY (Gastrophilus haemorrhoidalis L.)

Illinois F. C. Bishopp and C. C. Compton (October 1): Inquiry among farmers in this district developed the fact that this insect has been present and annoying to horses for at least 10 years. It is evident, however, that they are not as troublesome in the section about Elgin as in the Dakotas and elsewhere. The amount of annoyance this summer was about normal.

CHIN BOT-FLY (Gastrophilus nasalis L.)

New York and Illinois F. C. Bishopp (October 1-8): Adults of this species have apparently ceased activities, and the infestation of horses as judged by the number of eggs present is comparatively light.

OX WARBLE (Hypodema lineatum DeV.)

Texas

H. M. Brundrett, E. W. Laake, and F. C. Bishopp (October 23): Although this pest appeared in the backs of cattle much earlier than usual (the first appearing in the vicinity of Dallas about September 12), it has not increased in numbers very rapidly up to this time.

POULTRY

CHICKEN MITE (Dermanyssus gallinae Redi)

Texas

F. C. Bishopp (October 23): The usual increase in the number of chicken mites during the fall is being experienced. Some extremely heavy infestations have been included.

INSECTS ATTACKING STORED PRODUCTS

STORED GRAIN PESTS

Missouri

O. C. McBride (October 6): Several reports are coming in from the grain growers of Missouri regarding the stored grain pests. Most reports are from the southeastern Missouri Counties, besides a few other reports distributed throughout Missouri. Specimens of the following have been received by this department: Sitotroga cerealella Clav., Tenebroides mauritanicus L., Silvanus supranensis L., Erdosia kneriella Zell.

K. C. Sullivan (October 19): Weevils are doing a tremendous amount of damage to wheat in granaries. Bean and pea weevils are also doing serious damage this fall.

Nebraska

M. H. Swenk (September 15-30): A moderate number of complaints of stored grain pests continued to be received.

GRANARY WEEVIL (Calandra granaria L.)

New York

C. R. Crosby (September 7): Infested wheat was received from Lockport, N. Y.

CADILLE (Tenebroides mauritanicus L.)

Nebraska

M. H. Swenk (October 1-20): The number of complaints of stored grain pest continues to be moderate, or normal. Many of them are of the Cadille in 1922 wheat.

CRICKETS (Gryllus spp.)

Kansas

J. R. Horton (October 3): These so-called black crickets have been reported as being present in unusual numbers in many residences about Wichita -- most numerous in cellars. This is the first report on this insect as a household pest in five years.

GRAIN MITES (Tyroglyphus sp.)

Nebraska

M. H. Swenk (October 1-20): During the first week in October a very severe infestation of stored wheat by a grain mite, Tyroglyphus sp., came to attention in Cass County.

THE INSECT PEST SURVEY BULLETIN

A periodical review of entomological conditions throughout the United States,
issued on the first of each month from April to November, inclusive

Volume 3

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Common Name Index

The following list of common names is appended for the convenience of readers of this number of the Insect Pest Survey Bulletin and in no way should be construed as an approved list of common names; in fact, many of the names in this list will have radically different names proposed by the Committee of the American Association of Economic Entomologists. The names followed by the letters "a.n.o." are names which have already been approved by the American Association of Economic Entomologists and, for the time being, can be considered as standard. The others must be regarded as tentative.

A

See

Abbot's white pine sawfly - - - - -	- <u>Loophyrus abbotii</u> Leach
Alder blight - - - - -	- <u>Procciphilus tessellatus</u> Fitch
Alfalfa caterpillar - - - - -	- <u>Eurytus eurytherus</u> Boisd.
Alfalfa weevil a. n. o. - - - - -	- <u>Platynotus rusticus</u> Gyll.
Anomala - - - - -	- <u>Anomala orientalis</u> Waterh.
Ants - - - - -	-Formicidae
Apple and thorn skeletonizer - - - - -	- <u>Hemerophila pariana</u> Clerck
Apple flea weevil - - - - -	- <u>Orchestes pallicornis</u> Say
Apple-grain aphid - - - - -	- <u>Rhopalosiphum prunifoliae</u> Fitch
Apple leafhopper - - - - -	- <u>Eupoasca mali</u> LeB.
Apple maggot a.n.o. - - - - -	- <u>Rhagoletis pomonella</u> Walsb.
Apple red bug - - - - -	- <u>Heterocordylus malinus</u> Reut.
Arocrvitae leaf-miner - - - - -	- <u>Argyresthia thuiella</u> Pack.
Argentine ant a.n.o. - - - - -	- <u>Iridomyrmex humilis</u> Mayr
Argus tortoise-beetle - - - - -	- <u>Chelymropha cassidea</u> Fab.
Armyworm a.n.o. - - - - -	- <u>Cirphis unipuncta</u> Haw.
Artichoke plume moth - - - - -	- <u>Platyptilia</u> sp.
Ash aphid - - - - -	- <u>Pemphigus fraxinifolii</u> Thom.
Ash borer - - - - -	- <u>Podosesia fraxini</u> Lugger
Ash-gray blister-beetle a.n.o. - - - - -	- <u>Macrobasis unicolor</u> Kby.
Asparagus beetle - - - - -	- <u>Crioceris asparagi</u> L.
Avocado blossom thrips - - - - -	- <u>Frankliniella cephalicus</u> Craw.
Avocado leafhopper - - - - -	- <u>Eupoasca minuenda</u> Ball
Avocado leaf-roller - - - - -	- <u>Gracilaria perseae</u> Busck
Avocado leaf thrips - - - - -	- <u>Heliothrips haemorrhoidalis</u> Bouc.
Avocado red-spider - - - - -	- <u>Tetranychus yothersi</u> McG.
Avocado whitefly - - - - -	- <u>Trialeurodes floridensis</u> Q.

B

Bagworm a.n.o. - - - - -	- <u>Thyridonteryx ephemeraeformis</u> Ha.
Barn-swallow bug - - - - -	- <u>Oeciacus vicarius</u> Horv.
Basswood aphid - - - - -	- <u>Therioaphis tiliae</u> L.
Bean aphid - - - - -	- <u>Aphis rumicis</u> L.
Bean leaf-beetle a.n.o. - - - - -	- <u>Cerotoma trifurcata</u> Foerst.
Bean leaf-roller a.n.o. - - - - -	- <u>Eudamus proteus</u> L.
Bean weevil a.n.o. - - - - -	- <u>Mylaobis ootectus</u> Say
Bee louse - - - - -	- <u>Braula coeca</u> Nitzsch
Belted cucumber-beetle - - - - -	- <u>Diabrotica balteata</u> Lec.

See

Birch leaf-skeletonizer - - - - -	<u>Bucculatrix canadensisella</u> Chamb.
Biting louse of cattle - - - - -	<u>Trichodectes scalaris</u> Nitzsch
Blackberry crown-borer - - - - -	<u>Bembecia marginata</u> Harr.
Black blow-fly - - - - -	<u>Phormia regina</u> Meig.
Black chrysanthemum aphid - - - - -	<u>Macrosiphoniella sanborni</u> Gill.
Black fly - - - - -	<u>Simulium</u> sp.
Black grain-stem sawfly - - - - -	<u>Trachelus tabidus</u> Fabr.
Black-headed cranberry worm a.n.o. - - - - -	<u>Rhopobota naevana</u> Hbn.
Black-legged tortoise-beetle - - - - -	<u>Jonthonota nigripes</u> Oliv.
Black peach aphid a.n.o. - - - - -	<u>Anuraphis persicae-niger</u> Smith
Black plant-bug - - - - -	<u>Irbisia brachycerus</u> Uhler
Black scale a.n.o. - - - - -	<u>Saissetia oleae</u> Bern.
Black swallow-tail butterfly - - - - -	<u>Papilio polyxenes</u> Fab.
Black vine weevil - - - - -	<u>Brachyrhinus sulcatus</u> Fab.
Blister-beetles - - - - -	Meloidae
Blood-sucking cattle louse - - - - -	<u>Solenopotes capillatus</u> Enderlein
Blossom anomala - - - - -	<u>Anomala undulata</u> Melsh.
Boll weevil a.n.o. - - - - -	<u>Anthonomus grandis</u> Boh.
Booklouse - - - - -	<u>Atropos divinatoria</u> Muell.
Boxelder aphid a.n.o. - - - - -	<u>Periphyllus negundinis</u> Thos.
Boxelder plant-bug - - - - -	<u>Leptocoris trivittatus</u> Say
Boxelder twig-borer - - - - -	<u>Proteopteryx willingana</u> Kearf.
Boxwood leaf-miner - - - - -	<u>Monarthropalpus buxi</u> Labou.
Bronze birch borer - - - - -	<u>Agrilus anxius</u> Gory
Brown colaspis - - - - -	<u>Colaspis brunnea</u> Fab.
Brown dog tick - - - - -	<u>Rhipicephalus sanguineus</u> Latr.
Brown plum aphid - - - - -	<u>Hysteroneura setariae</u> Thos.
Brown-tail moth - - - - -	<u>Euproctis chrysorrhoea</u> L.
Brown winter tick - - - - -	<u>Dermacentor nigrolineatus</u> Pack.
Bruce's measuring-worm - - - - -	<u>Rachela bruceata</u> Hulst
Bud moth a.n.o. - - - - -	<u>Tmetocera ocellana</u> D. & S.
Budworm - - - - -	<u>Heliothis virescens</u> Fab.
Buffalo treehopper a.n.o. - - - - -	<u>Ceresa bubalus</u> Fab.
Bumble flower-beetle - - - - -	<u>Euphoria inda</u> L.

C

Cabbage aphid - - - - -	<u>Brevicoryne brassicae</u> L.
Cabbage curculio - - - - -	<u>Ceutorhynchus rapae</u> Gyll.
Cabbage maggot a.n.o. - - - - -	<u>Hydemyia brassicae</u> Bouche
Cabbage worm (imported cabbageworm a.n.o.) - - - - -	<u>Pontia rapae</u> L.
Cadelle - - - - -	<u>Tenebroides mauritanicus</u> L.
California pear sawfly - - - - -	<u>Gymnonychus californicus</u> Marlatt
Camphor scale - - - - -	<u>Pseudaonidia duplex</u> Ckll.
Camphor thrips a.n.o. - - - - -	<u>Cryptothrips floridensis</u> Watson
Carrot must fly - - - - -	<u>Psila rosae</u> Fab.
Catalpa midge - - - - -	<u>Cecidomyia catalpae</u> Comst.
Catalpa sphinx a.n.o. - - - - -	<u>Ceratonia catalpae</u> Boisd.
Cattle scab - - - - -	<u>Psoroptes communis</u> Furst.
Cattle tick a.n.o. - - - - -	<u>Margaropus annulatus</u> Say
Cheff scale a.n.o. - - - - -	<u>Parlatoria pergandii</u> Comst.
Cherry aphid a.n.o. - - - - -	<u>Myzus cerasi</u> Fab.

Cherry fruit-fly	<u>Rhagoletis cingulata</u> Loew
Chicken head louse	<u>Lipocurus heterognathus</u> Nitzsch
Chicken mite	<u>Dermanyssus gallinae</u> Redi
Chigger.	<u>Trombicula tlalzahuatl</u> Murray
Chinch bug a.n.o.	<u>Blissus leucopterus</u> Say
Chinese praying mantis	<u>Paratenodera sinensis</u> Sauss.
Chrysanthemum gall-midge	<u>Diarthronomyia hypogaea</u> F. Loew
Chrysanthemum leaf-tyer	<u>Phlyctaenia rubigalis</u> Guen.
Citrus root weevil	<u>Pachnaeus litius</u> Germ.
Citrus thrips	<u>Scirtothrips citri</u> Moulton
Citrus whitefly a.n.o.	<u>Dialeurodes citri</u> Ashm.
Climbing cutworms	<u>Lampra</u> spp.
Clothes moth	<u>Tinea pellionella</u> L.
Clover-leaf weevil	<u>Hypera punctata</u> Fab.
Clover mite a.n.o.	<u>Bryobia praetiosa</u> Koch
Clover root-borer a.n.o.	<u>Hylastinus obscurus</u> Marsh.
Clover-root curculio	<u>Sitona hispidulus</u> Fab.
Clover-seed caterpillar	<u>Laspeyresia interstinctana</u> Clem.
Clover-seed chalcid	<u>Bruchophagus funebris</u> How.
Coconut mealybug	<u>Pseudococcus nipae</u> Mask.
Codling moth a.n.o.	<u>Carnocapsa pomonella</u> L.
Common field cricket	<u>Gryllus assimilis</u> Fab.
Common goat louse	<u>Trichodectes climax</u> Nitzsch
Common mealybug	<u>Pseudococcus citri</u> Risso
Confused flour beetle	<u>Tribolium confusum</u> Duv.
Corn earworm	<u>Heliothis obsoleta</u> Fab.
Corn-leaf aphid	<u>Aphis maidis</u> Fitch
Corn-root webworm	<u>Crambus caliginosellus</u> Clem.
Cotton aphid a.n.o.	<u>Aphis gossypii</u> Glov.
Cotton flea	<u>Psallus seriatus</u> Reut.
Cotton leaf-bug	<u>Adelphocoris rapidus</u> Say
Cotton leaf perforator	<u>Bucculatrix thurberiella</u> Busck
Cotton leafworm	<u>Alabama argillacea</u> Hbn.
Cotton red-spider	<u>Tetranychus telarius</u> L.
Cotton square-boxer	<u>Uranotes melinus</u> Hbn.
Cottonwood leaf-beetle	<u>Melasoma scirpta</u> Fab.
Cottony-cushion scale a.n.o.	<u>Icerya purchasi</u> Mask.
Cottony grass scale	<u>Erionetis festucae</u> Fonsc.
Cottony-maple scale a.n.o.	<u>Pulvinaria vitis</u> L.
Cowpea curculio	<u>Chalcodermus aeneus</u> Boh.
Crazy ant	<u>Prenolepis longicornis</u> Latr.
Crickets	Gryllidae
Curfant aphid a.n.o.	<u>Myzus ribis</u> L.
Cutting ant	<u>Atta texana</u> Buck.
Cutworms	Noctuidae

D

Dandelion-root aphid	<u>Trama erigeronensis</u> Thos.
Dark mealworm	<u>Tenebrio obscurus</u> L.
Depressed flour-beetle	<u>Palorus depressus</u> Fab.
Dictyospermum scale	<u>Chrysomphalus dictyospermi</u> Morgan
Dry-land wireworm	<u>Ludius noxius</u> Hyslop

E

See

Eight-spotted forester a.n.o. - - - - -	- <u>Alypia octomaculata</u> Fab.
Elm aphid - - - - -	- <u>Myzocallis ulmifolii</u> Monell
Elm borer a.n.o. - - - - -	- <u>Saperda tridentata</u> Oliv.
Elm cockscomb gall - - - - -	- <u>Colopha ulmicola</u> Fitch
Elm leaf-beetle - - - - -	- <u>Galerucella luteola</u> Mull.
Elm leaf-miner - - - - -	- <u>Kaliopfenusa ulmi</u> Sund.
Eucynus scale a.n.o. - - - - -	- <u>Chionaspis euonymi</u> Comst.
European corn oorer a.n.o. - - - - -	- <u>Pyrausta nubilalis</u> Huebn.
European earwig - - - - -	- <u>Forficula auricularia</u> L.
European-elm scale a.n.o. - - - - -	- <u>Gossyparia spuria</u> Modeer
European fruit lecanium - - - - -	- <u>Lecanium corni</u> Bouche
European hen flea - - - - -	- <u>Ceratophyllus gallinae</u> Schrank
European pine-shoot moth - - - - -	- <u>Evetria buoliana</u> Schiff.
European red-mite - - - - -	- <u>Paratetranychus pilosus</u> C. & F.

F

Fall armyworm a.n.o. - - - - -	- <u>Laphygma frugiperda</u> S. & A.
Fall cankerworm a.n.o. - - - - -	- <u>Alseophila pometaria</u> Harr.
Fall webworm a.n.o. - - - - -	- <u>Hyphantria cunea</u> Drury
False apple red-bug - - - - -	- <u>Lygidea mendax</u> Reut.
False chinch-bug - - - - -	- <u>Nysius ericae</u> Schill.
Feather mite - - - - -	- <u>Liponyssus silviarum</u> C. & F.
Fire ant - - - - -	- <u>Solenopsis geminata</u> Fab.
Fir sawfly - - - - -	- <u>Lophyrus abietis</u> Harr.
Flat-headed apple-tree borer a.n.o. - - - - -	- <u>Chrysobothris femorata</u> Oliv.
Flat-headed hemlock borer - - - - -	- <u>Melanophila fulvoguttata</u> Harr.
Flea-beetles - - - - -	- <u>Halticinae</u>
Fleas - - - - -	- <u>Siphonaptera</u>
Flower thrips a.n.o. - - - - -	- <u>Euthrips tritici</u> Fitch
Fluff chicken louse - - - - -	- <u>Goniocotes holcogaster</u> Nitzsch
Forest tent-caterpillar a.n.o. - - - - -	- <u>Malacosoma disstria</u> Huebn.
Four-lined plant-bug - - - - -	- <u>Poecillocapsus lineatus</u> Fab.
Four-marked leaf-beetle - - - - -	- <u>Cryptoccephalus quadrimaculatus</u> Say
Fowl tick - - - - -	- <u>Argas miniatus</u> Koch
Fruit-tree leaf-roller - - - - -	- <u>Cacoecia argyrospila</u> Walk.
Fuller's rose beetle - - - - -	- <u>Pantomorus fulleri</u> Horn
Fuse-plug borer - - - - -	- <u>Dermestes frischi</u> Kug.

G

Galls - - - - -	- <u>Cynipidae</u>
Garden flea-hopper - - - - -	- <u>Halticus citri</u> Ashm.
Garden webworm a.n.o. - - - - -	- <u>Loxostege similalis</u> Guen.
German roach - - - - -	- <u>Blattella germanica</u> L.
Giant root-borer - - - - -	- <u>Prionus laticollis</u> Drury
Giant skipper - - - - -	- <u>Epargyreus titivrus</u> Fab.
Gipsy moth - - - - -	- <u>Porthetria dispar</u> L.
Goldenglow aphid - - - - -	- <u>Macrosiphum rudbeckiae</u> Fitch
Golden tortoise-beetle - - - - -	- <u>Metritona bicolor</u> Fab.
Granary weevil a.n.o. - - - - -	- <u>Calandra granaria</u> L.

Grape-berry moth a.n.o. - - - - -	<u>Polychrosis viteana</u> Clem.
Grape blossom midge - - - - -	<u>Contarinia johnsoni</u> Sling.
Grape cane-borer - - - - -	<u>Archicerus bicaudatus</u> Say
Grape flea-beetle a.n.o. - - - - -	<u>Haltica chalybea</u> Ill.
Grape leafhopper a.n.o. - - - - -	<u>Erythroneura comes</u> Say
Grape leaf-roller - - - - -	<u>Desmia funeralis</u> Huebn.
Grape phylloxera - - - - -	<u>Phylloxera vitifoliae</u> Fitch
Grape plume-moth a.n.o. - - - - -	<u>Oxyptilus periscelidactylus</u> Fitch
Grape rootworm a.n.o. - - - - -	<u>Fidia viticida</u> Walsh
Grape scale a.n.o. - - - - -	<u>Aspidiotus uvae</u> Comst.
Grape tube gall - - - - -	<u>Cecidomyia viticola</u> O.S.
Grapevine aphid - - - - -	<u>Macrosiphum illinoensis</u> Shim.
Grass mite - - - - -	<u>Pediculopsis graminum</u> Reut.
Grass stem weevil - - - - -	<u>Sphenophorus</u> sp.
Great-Plains false wireworm - - - - -	<u>Eleodes opaca</u> Say
Greater wheat-stem maggot - - - - -	<u>Meromyza americana</u> Fitch
Green apple aphid - - - - -	<u>Aphis pomi</u> DeG.
Green-bottle fly - - - - -	<u>Lucilia sericata</u> Meig.
Green bug - - - - -	<u>Toxoptera graminum</u> Rond.
Green chrysanthemum aphid - - - - -	<u>Aphis rufomaculata</u> Wilson
Green flea-beetle - - - - -	<u>Disonycha</u> sp. n.
Green fruitworm a.n.o. - - - - -	<u>Xylina antennata</u> Walker
Green June beetle a.n.o. - - - - -	<u>Cotinis nitida</u> L.
Green peach aphid a.n.o. - - - - -	<u>Myzus persicae</u> Sulz.
Green soldier-bug - - - - -	<u>Nezara hilaris</u> Fitch
Greenhouse leaf-tyer - - - - -	<u>Phlyctaenia ferrugalis</u> Hbn.
Greenhouse sowbug - - - - -	<u>Porcellio rathkei</u> Brandt
Green-striped maple worm - - - - -	<u>Anisota rubicunda</u> Fab.
Guava leaf-roller - - - - -	<u>Attelabus sexmaculatus</u> Chev.

H

Hag moth a.n.o. - - - - -	<u>Phobetron pithecium</u> S. & A.
Half-winged geometer - - - - -	<u>Phigalia titea</u> Cramer
Harlequin cabbage bug a.n.o. - - - - -	<u>Murgantia histrionica</u> Hahn
Henhouse bedbug - - - - -	<u>Haematosiphon inodorus</u> Duges
Hessian fly a.n.o. - - - - -	<u>Phytophaga destructor</u> Say
Hickory bark-beetle a.n.o. - - - - -	<u>Scolytus quadrispinosus</u> Say
Hickory nut weevil - - - - -	<u>Balaninus carvae</u> Horn
Horn fly - - - - -	<u>Haematobia irritans</u> L.
Horse bot-fly - - - - -	<u>Gastrochilus intestinalis</u> DeG.
Horseradish flea-beetle - - - - -	<u>Phyllotreta amaraciacae</u> Koch
House cricket a.n.o. - - - - -	<u>Cryllus domesticus</u> L.
House fly a.n.o. - - - - -	<u>Musca domestica</u> L.

I

Imbricated snout-beetle a.n.c. - - - - -	<u>Epicaerus imbricatus</u> Say
Imported currant borer - - - - -	<u>Aegeria tinuliformis</u> Clerck
Imported currantworm a.n.o. - - - - -	<u>Pteronidea ribesi</u> Scop.
Imported pine sawfly - - - - -	<u>Diprion simile</u> Hartig
Imported poplar and willow beetle - - - - -	<u>Plagiodera versicolora</u> Laich.
Indian-meal moth a.n.o. - - - - -	<u>Plodia interpunctella</u> Huebn.

See

Inflated wireworm - - - - - Ludius inflatus Say
 Iris borer - - - - - Macronoctua onusta Grote
 Irrigation wireworm - - - - - Pheletes sp.

J

Japanese beetle - - - - - Popillia japonica Newm.

K

Lappet moth - - - - - Tolyte vellea Comst.
 Larch case-bearer a.n.o. - - - - - Coleophora laricella Huebn.
 Larch sawfly - - - - - Nematus erichsonii Hartig
 Larder beetle a.n.o. - - - - - Dermestes lardarius L.
 Large body hen louse (or Large head louse) - - - - - Menopon biseriatum Piaget
 Larger chestnut weevil - - - - - Balaninus proboscideus Fab.
 Leafhoppers - - - - - Jassidae
 Leaf-roller - - - - - Archips parallela Rob.
 Lesser appleworm a.n.o. - - - - - Laspeyresia prunivora Walsh
 Lesser canna leaf-roller - - - - - Geshna cannalis Quaint.
 Lesser chestnut weevil - - - - - Balaninus algonquinus Casey
 Lesser clover-leaf weevil - - - - - Phytonomus nigrirostris Fab.
 Lesser corn stalk-borer - - - - - Elasmopalpus lignosellus Zell.
 Lesser peach-tree borer - - - - - Aegeria pictipes G. & R.
 Lilac borer a.n.o. - - - - - Podosesia syringae Harr.
 Little black ant - - - - - Monomorium minimum Buckley
 Little hickory aphid - - - - - Monellia caryella Fitch
 Locust borer a.n.o. - - - - - Cyllene robiniae Forst.
 Locust leaf-miner - - - - - Chalepus dorsalis Thunb.
 Lubber grasshopper - - - - - Brachystola magna Gir.

M

Magnolia scale a.n.o. - - - - - Neolecanium cornuparvum Thos.
 Malaria mosquito - - - - - Anopheles quadrimaculatus Say
 Mango shield scale - - - - - Coccus acuminatus Sign.
 Maple chaitophorus - - - - - Periphyllus lyropicta Kies.
 March flies - - - - - Bibio spp.
 May beetles - - - - - Phyllophaga spp.
 Meal snout-moth - - - - - Pyralis farinalis L.
 Mealy plum aphid - - - - - Hyalopterus arundinis Fab.
 Mediterranean flour moth a.n.o. - - - - - Ephestia kuehniella Zell.
 Melon caterpillar a.n.o. - - - - - Diaphania hvalinata L.
 Mesquite borer - - - - - Schizax senex Lec.
 Mexican bean beetle - - - - - Epilachna corrupta Muls.
 Millipede - - - - - Diploiuulus luscus
 Monterey-cypress bark-beetle - - - - - Phloeosinus cupressi Hopk.
 Mormon cricket - - - - - Anabrus simplex Hald.

See

Mosquitoes - - - - -	Culicidae
Mottled tortoise-beetle - - - - -	<u>Chirida guttata</u> Oliv.
Mound-building ant. - - - - -	<u>Formica exsectoides</u> Forel
Mountain-pine beetle a.n.o. - - - - -	<u>Dendroctonus monticolae</u> Hopk.
Murky ground-beetle - - - - -	<u>Harpalus caliginosus</u> Fab.

N

Naked slugs - - - - -	<u>Agriolimax</u> sp.
Nantucket pine moth - - - - -	<u>Rhyacionia frustrana</u> Comst.
Narcissus-bulb fly - - - - -	<u>Merodon equestris</u> Fab.
Negro bug a.n.o. - - - - -	<u>Corimelaera pulicaria</u> Germ.
New York weevil a.n.o. - - - - -	<u>Ithycerus noveboracensis</u> Forst.
Northern tobacco hornworm - - - - -	<u>Protonarce quinquemaculata</u> Haw.
Nuttall's blister-beetle - - - - -	<u>Lytta nuttalli</u> Say

O

Oak leaf-roller - - - - -	<u>Tortrix quercifoliana</u> Fitch
Oak lecanium - - - - -	<u>Lecanium quercifex</u> Fitch
Obscure scale - - - - -	<u>Chrysomphalus obscurus</u> Comst.
Onion maggot a.n.o. - - - - -	<u>Hylemyia antiqua</u> Meig.
Onion thrips a.n.o. - - - - -	<u>Thrips tabaci</u> Lind.
Orange basket-worm - - - - -	<u>Platoeceticus gloverii</u> Pack
Orange leaf-notcher - - - - -	<u>Artipus floridanus</u> Horn
Oriental fruit-moth - - - - -	<u>Laspeyresia molesta</u> Busck
Oriental moth a.n.o. - - - - -	<u>Cnidocampa flavescens</u> Walk.
Ox warble - - - - -	<u>Hypoderma</u> spp.
Oyster-shell scale a.n.o. - - - - -	<u>Lepidosaphes ulmi</u> L.

P

Pacific poplar girdler - - - - -	<u>Agrilus nevadensis</u> Horn
Pale-marked ash borer - - - - -	<u>Eburia quadrigeminata</u> Say
Pale-striped flea-beetle a.n.o. - - - - -	<u>Systema taeniata</u> Melsh.
Pale tussock moth - - - - -	<u>Halisidota tessellaris</u> S. & A.
Pales weevil - - - - -	<u>Hylobius pales</u> Herbst
Palmetto leaf-miner - - - - -	<u>Homaledra sabalella</u> Chamb.
Pan-American platypus - - - - -	<u>Platypus compositus</u> Say
Papaya fruit-fly a.n.o. - - - - -	<u>Toxotrypana curvicauda</u> Gerst.
Pea aphid - - - - -	<u>Illinoia pisi</u> Kalt.
Pea moth - - - - -	<u>Semasia nigricana</u> Steph.
Pea weevil a.n.o. - - - - -	<u>Mylabris pisorum</u> L.
Peach and plum slug - - - - -	<u>Eriocampoides amygdalina</u> Rohwer
Peach borer - - - - -	<u>Aegeria exitiosa</u> Say
Peach-twig moth a.n.o. - - - - -	<u>Anarsia lineatella</u> Zell.
Pear-leaf blister-mite a.n.o. - - - - -	<u>Eriophyes pyri</u> Pgst.
Pear midge - - - - -	<u>Contarinia pyrivora</u> Riley
Pear slug a.n.o. - - - - -	<u>Caliroa cerasi</u> L.

See

Pecan bud-moth - - - - -	- <u>Proteopteryx bolliana</u> Sling.
Pecan cigar case-bearer - - - - -	- <u>Coleophora caryaefoliella</u> Clem.
Pecan-leaf case-bearer - - - - -	- <u>Acrobasis nebulella</u> Riley
Pecan-nut case-bearer - - - - -	- <u>Acrobasis hebescella</u> Hulst
Pecan phylloxera - - - - -	- <u>Phylloxera devastatrix</u> Perg.
Pecan shuckworm - - - - -	- <u>Laspeyresia carvana</u> Fitch
Pecan spittle-bug - - - - -	- <u>Clastoptera obtusa</u> Say
Pecan weevil - - - - -	- <u>Balaninus caryae</u> Horn
Pepper weevil - - - - -	- <u>Anthonomus eugenii</u> Cano
Periodical cicada a.n.o. - - - - -	- <u>Tibicina septendecim</u> L.
Pickleworm a.n.o. - - - - -	- <u>Diaphania nitidalis</u> Cramer
Pine bark louse - - - - -	- <u>Chermes pinicorticis</u> Fitch
Pine butterfly - - - - -	- <u>Neophasia menapia</u> Feld.
Pine defoliater - - - - -	- <u>Coloradia pandora</u> Blake
Pine-leaf scale - - - - -	- <u>Chionaspis pinifoliae</u> Fitch
Pine tube-moth - - - - -	- <u>Eulia pinatubana</u> Kearf.
Pipevine swallowtail - - - - -	- <u>Papilio philenor</u> L.
Plum curculio a.n.o. - - - - -	- <u>Conotrachelus nenuphar</u> Hbst.
Plum gouger a.n.o. - - - - -	- <u>Anthonomus scutellaris</u> Lec.
Poplar borer a.n.o. - - - - -	- <u>Saperda calcarata</u> Say
Potato aphid - - - - -	- <u>Macrosiphum solanifolii</u> Ashm.
Potato beetle - - - - -	- <u>Leptinotarsa decemlineata</u> Say
Potato flea-beetle a.n.o. - - - - -	- <u>Epitrix cucumeris</u> Harr.
Potato leafhopper - - - - -	- <u>Empoasca mali</u> LeB.
Potato stalk-borer a.n.o. - - - - -	- <u>Trichobaris trinotata</u> Say
Poultry mite - - - - -	- <u>Dermanyssus gallinae</u> Redi
Powder-post beetle - - - - -	- <u>Lyctus linearis</u> Goeze
Primrose flea-beetle - - - - -	- <u>Haltica foliacea</u> Lec.
Purple scale a.n.o. - - - - -	- <u>Lepidosaphes beckii</u> Newm.
Puss caterpillar - - - - -	- <u>Megalopyge opercularis</u> S. & A.
Pyriform scale a.n.o. - - - - -	- <u>Protopulvinaria pyriformis</u> Ckll.

R

Rascal leaf-crumpler - - - - -	- <u>Mineola indigenella</u> Zell.
Raspberry cane-borer a.n.o. - - - - -	- <u>Oberea bimaculata</u> Oliv.
Raspberry fruitworm - - - - -	- <u>Byturus unicolor</u> Say
Raspberry maggot - - - - -	- <u>Phorbia rubivora</u> Coq.
Raspberry sawfly a.n.o. - - - - -	- <u>Monophadnoides rubi</u> Harr.
Red-banded leaf-roller - - - - -	- <u>Eulia velutinana</u> Walk.
Red-cedar bark-beetle - - - - -	- <u>Phloeosinus dentatus</u> Say
Red-humped caterpillar a.n.o. - - - - -	- <u>Schizura concinna</u> S. & A.
Red spider(a)- - - - -	- <u>Tetranychus viridis</u> Banks
Red-tail bot-fly - - - - -	- <u>Gastrophilus haemorrhoidalis</u> L.
Regal-moth - - - - -	- <u>Citheronia regalis</u> Fab.
Rhubarb curculio - - - - -	- <u>Lixus concavus</u> Say
Ribbed cocoon-maker - - - - -	- <u>Bucculatrix pomifoliella</u> Clem.
Rice stalk-borer - - - - -	- <u>Chilo plejadellus</u> Zinck.
Rice water weevil - - - - -	- <u>Lissorhoptrus simplex</u> Say
Rice weevil a.n.o. - - - - -	- <u>Calandra oryza</u> L.
Robber fly - - - - -	- <u>Saropogon dispar</u> Coq.

Root-knot nematode - - - - -	<u>Heterodera radiculicola</u> Greef-Mueller
Rose aphid - - - - -	<u>Macrosiphum rosae</u> L.
Rose chafer a.n.o. - - - - -	<u>Macrodactylus subspinosus</u> Fab.
Rose curculio - - - - -	<u>Rhynchites bicolor</u> Fab.
Rose leaf-beetle - - - - -	<u>Nodonota puncticollis</u> Say
Rose leafhopper - - - - -	<u>Empoa rosae</u> L.
Rose leaf-roller - - - - -	<u>Archips rosaceana</u> Harr.
Rose midge - - - - -	<u>Dasyneura rhodophaga</u> Coq.
Rose sawfly a.n.o. - - - - -	<u>Caliroa aethiops</u> Fab.
Rose scale a.n.o. - - - - -	<u>Aulacaspis rosae</u> Bouche
Rosy apple aphid - - - - -	<u>Anuraphis roseus</u> Baker
Rough-headed corn stalk-beetle - - - - -	<u>Ligyrus (Euetheola) rugiceps</u> Lec.
Roundheaded apple-tree borer a.n.o. - - - - -	<u>Saperda candida</u> Fab.

S

Saint Andrew's cotton-stainer - - - - -	<u>Dysdercus andreae</u> L.
Salt-marsh mosquito - - - - -	<u>Aedes sollicitans</u> Walk.
San Jose scale a.n.o. - - - - -	<u>Aspidiotus perniciosus</u> Comst.
Satin moth - - - - -	<u>Stilpnotia salicis</u> L.
Say's blister-beetle - - - - -	<u>Pomphopoea savi</u> Lec.
Screwworm a.n.o. - - - - -	<u>Chrysomya macellaria</u> Fab.
Seed-corn maggot - - - - -	<u>Hylemyia cilicrura</u> Rond.
Serpentine leaf-miner - - - - -	<u>Agromyza pusilla</u> Meig.
Sheep bot-fly - - - - -	<u>Oestrus ovis</u> L.
Sheep scab - - - - -	<u>Psoroptes communis</u> Furst.
Shot-hole borer a.n.o. - - - - -	<u>Scolytus rugulosus</u> Ratz.
Silver leaf mite - - - - -	<u>Phyllocoptes cornutus</u> Banks
Silver-maple leaf mite - - - - -	<u>Phyllocoptes quadripes</u> Shim.
Six-spotted leafhopper a.n.o. - - - - -	<u>Cicadula 6-notata</u> Fau.
Small body hen louse - - - - -	<u>Menopon pallidum</u> Nitzsch
Small red-horned borer - - - - -	<u>Ptilinus ruficornis</u> Say
Small willow flea-beetle - - - - -	<u>Chalcoides helxines</u> L.
Smartweed borer - - - - -	<u>Pyrausta ainsliei</u> Heinr.
Snail (a) - - - - -	<u>Helix aspersa</u> Muller
Snowy tree-cricket a.n.o. - - - - -	<u>Oecanthus niveus</u> DeG.
Sorghum webworm - - - - -	<u>Celama sorghiella</u> Riley
Southern beet webworm - - - - -	<u>Pachyzancla binunctalis</u> Fab.
Southern corn leaf-beetle - - - - -	<u>Myochrous denticollis</u> Say
Southern green plant-bug - - - - -	<u>Nezara viridula</u> L.
Southern tobacco hornworm - - - - -	<u>Protoparce sexta</u> Joh.
Sowbugs - - - - -	<u>Armadillidium vulgare</u> Latr. <u>Porcellio scaber</u> Latr.
Spanworm - - - - -	<u>Ennomos subsignarius</u> Huebn.
Spear mark - - - - -	<u>Eulypa hastata</u> L.
Spinach leaf-miner - - - - -	<u>Pegomya hyoscyami</u> Panz.
Spindleworm - - - - -	<u>Achatodes zeae</u> L.
Spiny elm caterpillar - - - - -	<u>Eu Vanessa antiopa</u> L.
Spiny rose gall - - - - -	<u>Rhodites bicolor</u> Harr.
Spirea aphid - - - - -	<u>Aphis spiraeella</u> Schout.
Spittle insects - - - - -	<u>Cercopidae</u>
Spotted beetworm - - - - -	<u>Hymenia perspectalis</u> Hbn.

See

Spotted cutworm - - - - -	<u>Agrotis c-nigrum</u> L.
Spotted-fever tick - - - - -	<u>Dermacentor venustus</u> Banks
Spring cankerworm a.n.o. - - - - -	<u>Paleacrita vinnata</u> Peck
Spruce budworm - - - - -	<u>Harmoloba fumiferana</u> Clem.
Spruce cone-worm - - - - -	<u>Dioryctria reniculella</u> D. & S.
Spruce gall aphid - - - - -	<u>Chermes abietis</u> L.
Squash bug a.n.o. - - - - -	<u>Anasa tristis</u> DeG.
Squash-vine borer - - - - -	<u>Melittia satyriniformis</u> Huebn.
Stable fly a.n.o. - - - - -	<u>Stomoxys calcitrans</u> L.
Stalk borer a.n.o. - - - - -	<u>Papaipema nitela</u> Guen.
Sticktight flea - - - - -	<u>Echidnophaga gallinacea</u> West.
Stink-bugs - - - - -	Pentatomidae
Strawberry crown-borer a.n.o. - - - - -	<u>Tyloderma fragariae</u> Riley
Strawberry flea-beetle - - - - -	<u>Haltica ignita</u> Ill.
Strawberry leaf-beetle - - - - -	<u>Paria canella</u> Fab.
Strawberry leaf-roller a.n.o. - - - - -	<u>Ancylis comptana</u> Froehl.
Strawberry-root weevil - - - - -	<u>Brachyrhinus ovatus</u> L.
Strawberry sawfly - - - - -	<u>Empria maculata</u> Norton
Strawberry weevil a.n.o. - - - - -	<u>Anthonomus signatus</u> Say
Straw-itch mite - - - - -	<u>Pediculoides ventricosus</u> Newp.
Striped cucumber-beetle a.n.o. - - - - -	<u>Diabrotica vittata</u> Fab.
Striped flea-beetle a.n.o. - - - - -	<u>Phyllotreta vittata</u> Fab.
Striped tree-cricket - - - - -	<u>Oecanthus nigricornis</u> Walk.
Sucking goat louse - - - - -	<u>Linognathus stenopsis</u> Burm.
Sugar-beet root-maggot - - - - -	<u>Tetanops aldrichi</u> Hendel
Sugar-beet webworm - - - - -	<u>Loxostege sticticalis</u> L.
Sugar-cane beetle a.n.o. - - - - -	<u>Ligyra (Eutheola) rugiceps</u> Lec.
Sugar-cane borer a.n.o. - - - - -	<u>Diatraea saccharalis</u> Fab.
Sumac psyllid - - - - -	<u>Calophya nigripennis</u> Riley
Sunflower peacock fly - - - - -	<u>Straussia longipennis</u> Wied.
Sweet-potato weevil a.n.o. - - - - -	<u>Cylas formicarius</u> L.

T

Tarnished plant-bug a.n.o. - - - - -	<u>Lygus pratensis</u> L.
Tent caterpillar a.n.o. - - - - -	<u>Malacosoma americana</u> Fab.
Termites - - - - -	<u>Reticulitermes flavipes</u> Kol.
Three-lined fig borer - - - - -	<u>Ptychodes vittata</u> Fab.
Throat bot-fly - - - - -	<u>Gastrophilus nasalis</u> L.
Tiger swallowtail - - - - -	<u>Papilio glaucus</u> var. <u>turnus</u> L.
Tiny red ant - - - - -	<u>Monomorium pharaonis</u> L.
Tobacco flea-beetle a.n.o. - - - - -	<u>Ebitrix parvula</u> Fab.
Tobacco hornworm - - - - -	<u>Protoparce sexta</u> Joh.
Tobacco suckfly - - - - -	<u>Dicyphus minimus</u> Uhler
Tobacco thrips - - - - -	<u>Frankliniella fusca</u> Hinds
Tropical fowl mite - - - - -	<u>Liponyssus bursa</u> Berlese
Tulip aphid - - - - -	<u>Anuraphis tulipae</u> Boyer
Tulip scale - - - - -	<u>Toumeyella liriodendri</u> Gmel.
Tulip spot gall - - - - -	<u>Thecodiplosis liriodendri</u> O. S.
Turnip aphid - - - - -	<u>Rhopalosiphum pseudobrassicæ</u> Davis
Twelve-spotted cucumber-beetle - - - - -	<u>Diabrotica duodecimpunctata</u> I.
Twig girdler - - - - -	<u>Oncideres cingulata</u> Say

See

Two-lined chestnut borer a.n.o. - - - - -	<u>Agrilus bilineatus</u> Weber
Two-striped grasshopper - - - - -	<u>Melanoplus bivittatus</u> Say
Two-striped sweet-potato beetle - - - - -	<u>Cassida bivittata</u> Say

V

Vagabond gall-louse - - - - -	<u>Pemphigus vagabundus</u> Walsh
Variegated cutworm - - - - -	<u>Lycophotia margaritosa</u> Haw.
Velvet-bean caterpillar - - - - -	<u>Anticarsia gemmatilis</u> Hbn.

W

Walnut datana - - - - -	<u>Datana integerrima</u> G. & R.
Water-lily aphid - - - - -	<u>Rhopalosiphum nymphaeae</u> L.
Western army-cutworm - - - - -	<u>Chorizagrotis auxiliaris</u> Grote
Western flea-beetle - - - - -	<u>Phyllotreta pusilla</u> Horn
Western-pine beetle a.n.o. - - - - -	<u>Dendroctonus brevicornis</u> Lec.
Western potato flea-beetle - - - - -	<u>Epitrix subcrinita</u> Lec.
Western wheat sawfly - - - - -	<u>Cephus cinctus</u> Nort.
Wheat-head armyworm a.n.o. - - - - -	<u>Heliothela albilinea</u> Hbn.
Wheat jointworm - - - - -	<u>Harmolita tritici</u> Fitch
Wheat sawfly borer - - - - -	<u>Cephus pygmaeus</u> L.
Wheat-sheath gall jointworm - - - - -	<u>Harmolita vaginicola</u> Doane
Wheat strawworm - - - - -	<u>Harmolita grandis</u> Riley
Wheel bug - - - - -	<u>Arilus cristatus</u> L.
White ant - - - - -	<u>Reticulitermes flavipes</u> Kol.
White-blotch oak leaf-miner - - - - -	<u>Lithocolletes hamadryella</u> Clem.
Whiteflies - - - - -	Aleurodidae
White-lined sphinx - - - - -	<u>Deilephila lineata</u> Fab.
White-marked tussock moth a.n.o. - - - - -	<u>Hemerocampa leucostigma</u> S. & A.
White-pine aphid - - - - -	<u>Lachnus strobi</u> Fitch
White-pine weevil - - - - -	<u>Pissodes strobi</u> Peck
Willow curculio - - - - -	<u>Cryptorhynchus lapathi</u> L.
Wingless May-beetle - - - - -	<u>Phyllophaga</u> sp.
Wing louse - - - - -	<u>Lipeurus variabilis</u> Nitzsch
Winter tick - - - - -	<u>Dermacentor albipictus</u> Pack.
Wireworms - - - - -	Elateridae
Wood leopard moth - - - - -	<u>Zeuzera pyrina</u> Fab.
Woolly apple aphid a.n.o. - - - - -	<u>Eriosoma lanigerum</u> Hausm.
Woolly beech aphid - - - - -	<u>Phyllaphis fagi</u> L.
Woolly elm aphid - - - - -	<u>Eriosoma americanum</u> Riley
Woolly maple-leaf scale - - - - -	<u>Phenacoccus acericola</u> King
W-marked cutworm - - - - -	<u>Noctua clandestina</u> Harr.

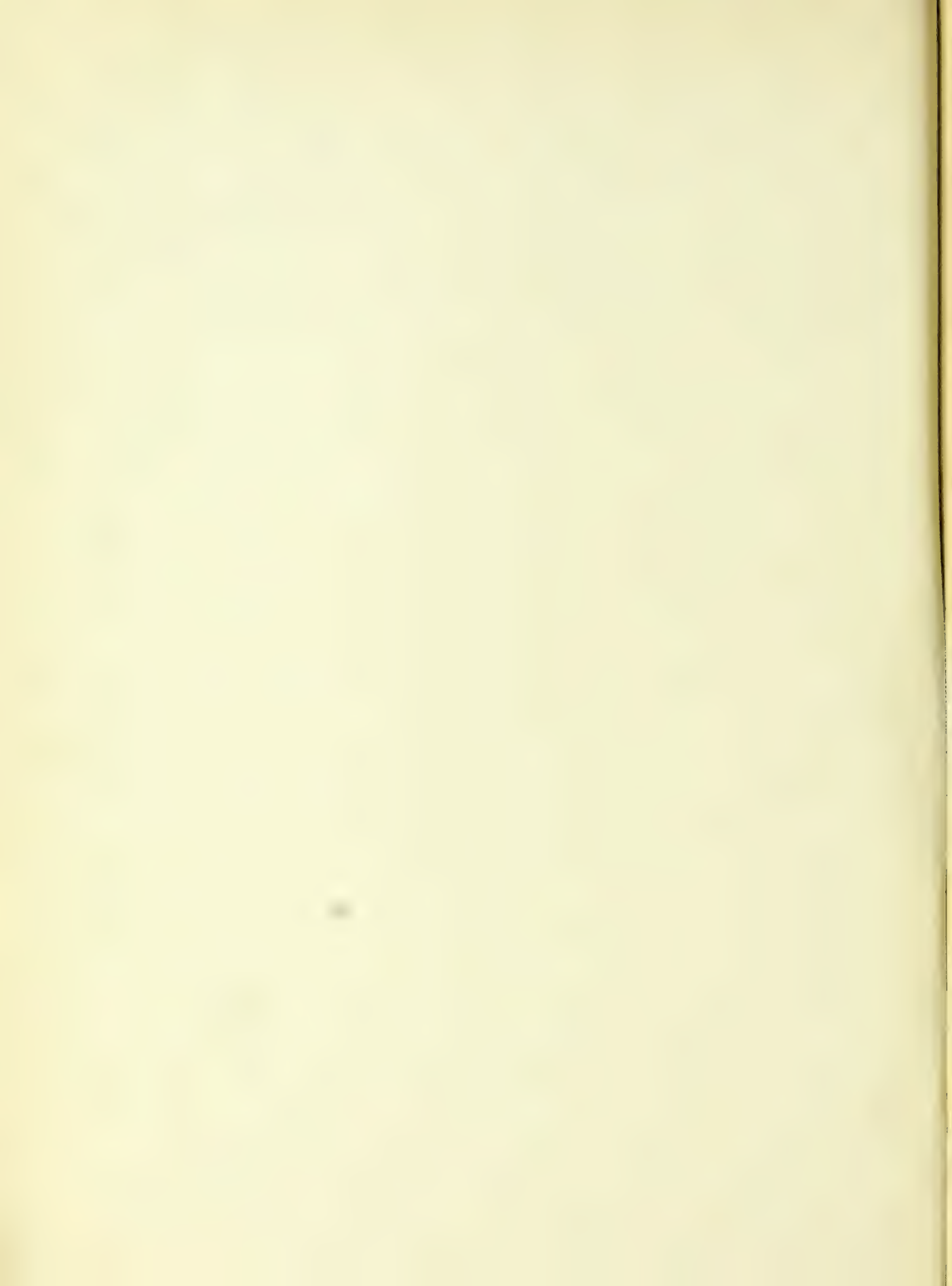
Y

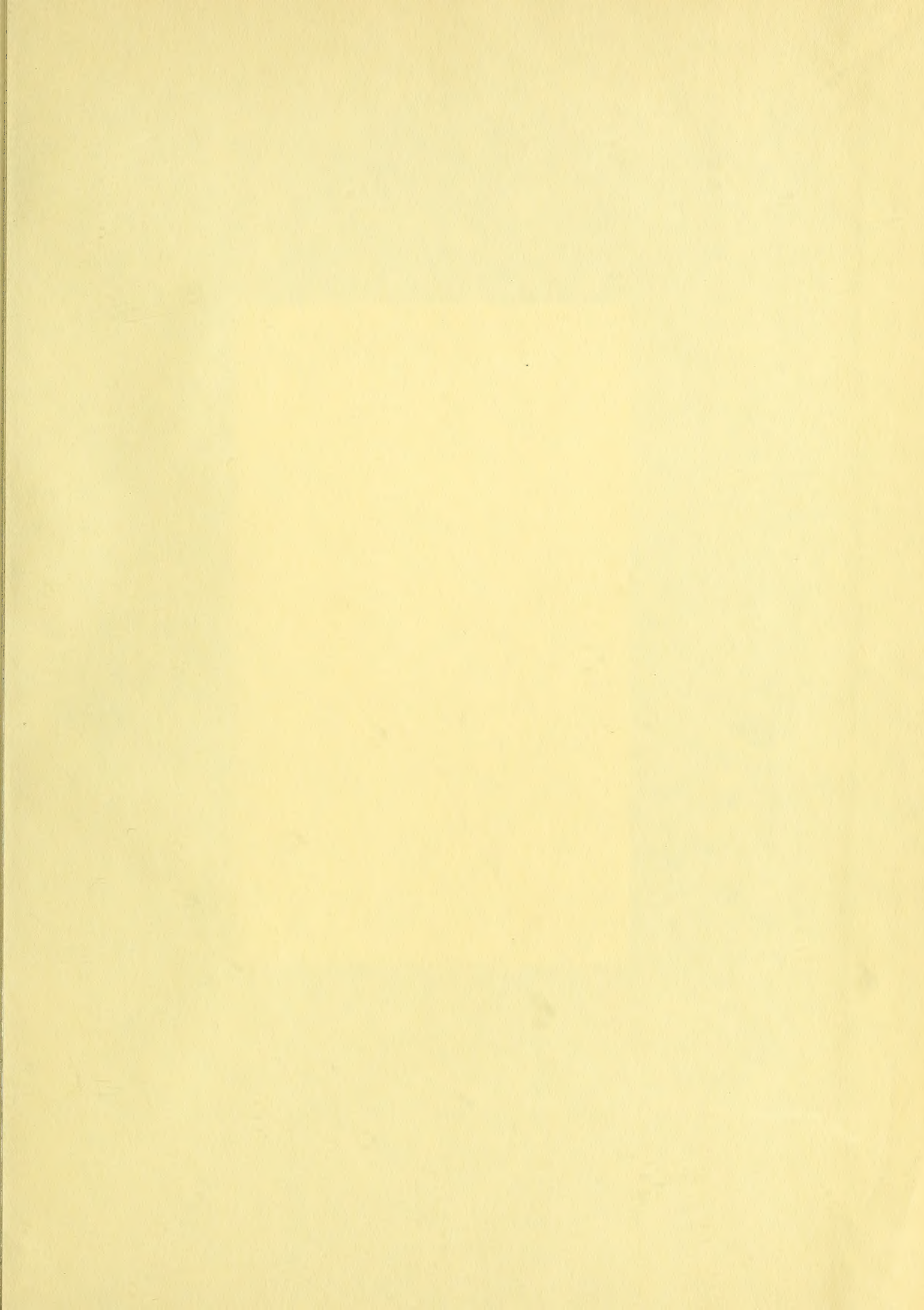
Yellow-bear caterpillar - - - - -	<u>Diacrisia virginica</u> Fab.
Yellow-fever mosquito - - - - -	<u>Aedes aegypti</u> L.
Yellow-striped armyworm - - - - -	<u>Prodenia ornithogalli</u> Guen.
Yellow sugar-cane aphid - - - - -	<u>Sipha flava</u> Forbes

Z

Zebra caterpillar a.n.o. - - - - -	<u>Mamestra picta</u> Harr.
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